THE RUBBER AGE

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THE
RUBBER AGE

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Keeping a Rubber Factory Clean

By William Jameson

Advisory Engineer, The Fisk Rubber Company, Chicopee Falls, Mass.

Good housekeeping in a rubber factory indicates good management. A clean factory denotes a clean quality product made by a healthy force of employes. The greatest asset in any factory is the human machinery, and employers within the ast few years have learned the value of maintaining this nachinery to the highest point of efficiency.

In these days when it is necessary because of readjustment to get maximum production at minimum cost, it is more necessary than ever that the working force be fit at all times, ınd absenteeism because of sickness and accidents reduced to minimum. A clean work place and clean environment, ith plenty of light, both natural and artificial, more than lequate toilet and washing facilities, and shower baths where ıey are needed do much toward the contentment and good ·alth of the employe. Lower maintenance costs will be reized from maintaining a clean plant.

In a factory where inadequate attention is paid to cleaniness one may safely look for many other unsatisfactory conditions, such as poor workmanship, high insurance rates, a poor accident record, and people working below their normal efficiency.

The Importance of Cleanliness

In the rubber industry, because of the nature of the work, it is necessary that more time and thought be given to the subject of factory cleaning than in many other lines of manufacture—because of the quantities of grease, oil and dust ·ncountered.

There is a vast difference in housekeepers. Some homes ·e immaculate—other people seem to have a faculty of living nder conditions which are decidedly unsanitary and not onductive to good health. In these homes you will find all :inds of unsanitary conditions, much illness and unhappiness. All of us know from observance that the housewife who keeps ıer home clean is a very busy woman. It requires a great deal of her time and much hard work, yet she goes on from day to day over the same ground cleaning and scrubbing and her work is never completed.

Such is the task in the rubber factory, only on a much larger scale and under much more trying conditions. In some plants even now the cleaning is done under the supervision of the foremen in the various departments. This is the least important thing he has to do. First of all comes production, naturally, and the sweeper is usually a man who has been in the employ of the company for many years and because of disability has been made fit for no work other than sweeping. He is handed a broom with no instructions whatever and placed at work. Frequently he is taken off this work and placed at other work, such as running errands or filling in a niche caused by the absence of some productive employe. No accurate idea can be obtained in such a plant as to the ıctual cost of sweeping and the results obtained under such a plan can be only partially efficient. Other plants, having realized the importance of maintaining cleanliness, have organized departments to specialize in this line of work.

Organization of a Sanitary Department

In one plant with which I am familiar, a sanitary department was organized about two years ago under the supervision of a man who had no other duties than to keep the plant clean. A considerable amount of discussion and many conferences were held before any attempt was made to get under way. A few of the sweepers who were then under the supervision of production foremen were taken over; a week or so later another group was transferred to the sanitary department, and so on, until the entire group of sweepers had been transferred. Several changes were made in personnel, weeding out driftwood and replacing with men who were able to perform a day's work.

The men who were to be used as sweepers were distributed about the plant to the best advantage on both day and night shifts with proper supervision, proper equipment, and headquarters where additional equipment and material could be secured when needed.

Crews were organized to clean toilets, lockers, sinks, stair towers, tunnels, overhead passageways, mill pits, elevator pits, windows and factory offices, and another group was organized for general utility work.

Immediately better results were obtained at a considerable reduction in cost. Some difficulty was encountered at first in defining the duties of the sanitary department in view of the fact that these men had been called upon to carry on so many different activities under the old plan. This condition was easily adjusted and in some cases it was necessary for the foremen to hire a helper to do the work the sweeper had been doing. This plan worked very satisfactorily with a general supervisor, day and night foreman, day and night assistant foreman and crew leaders until business conditions made it necessary to change the working hours.

Readjusting the Program

The elimination of the night shift in the factory called for a readjusted sanitary program. It was deemed advisable to clean the plant during the night hours; the force was reduced proportionately, and the men, having free access, could make much better time and did not interfere with production. This plan was in force for a time, but was not wholly satisfactory. Artificial light is not daylight, and many dark corners were left untouched. It was also necessary to keep a force of men on duty during the day to take care of emergency work.

The resumption of activities again placed a night force of production employes at work and the third sanitary department adjustment was made and is in effect at the present time as follows:

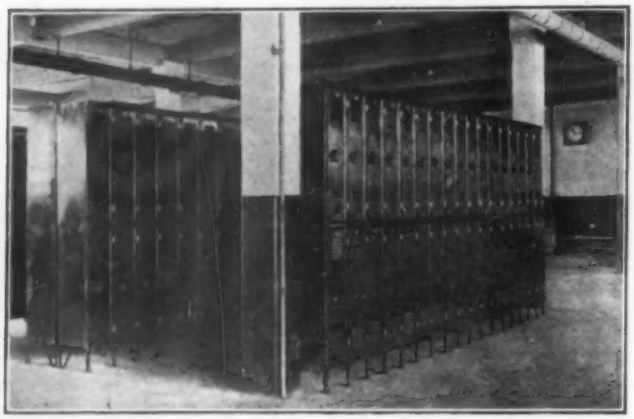
One superintendent exercises general supervision over the

Address delivered at the Tenth Annual Congress of the National Safety Council, Boston, Mass., September 28.

entire department assisted by two foremen—one for days and one for nights.

Three squad leaders of recognized ability—two on the day force and one on nights, perform emergency work and work with and check men when in squads or on special work.

During the day, in departments or locations where litter accumulates in great quantities, one or more sweepers are



METAL LOCKERS, SANITARY AND EASY TO CLEAN

assigned and put in all their time in one locality. For the most part the sweeping is done by placing men in two squads, each squad looking after certain sections of buildings, covering all sections at least once daily.

The night sweepers work in one squad and usually start at the top floors and work to the basement, returning in the early morning to clean those places where the plant has been operated during the night.

The entire day force and many of the night force work Saturday afternoons and make a general weekly cleaning, as most of the machinery is idle and the men can get into spaces which they are unable to reach during the week.

With a few exceptions for emergencies the men of day force report one hour later and quit one hour later than the factory working force. The night force report and quit one half hour later than the factory night force.

Toilet cleaners both day and night make the rounds of the factory with a few exceptions, twice in twenty-four hours, supply racks with paper, flush, cleanse and disinfect each bowl and urinal in some sixty-four toilet rooms.

Two men on day force scrub and clean sinks, drinking fountains and shower baths, replenish containers with liquid soap, etc. This is not done at night unless deemed necessary.

Window Cleaning

Weather permitting, three men are used to clean windows.

Three women wipe, dust and disinfect 6000 metal clothes lockers, making the rounds of the factory about once in three weeks.

Two women scrub and clean women's toilets, dressing rooms, restaurant, hospital and stair towers.

One man on nights scrubs the offices of the factory foremen.

One man on nights cleans lamps and shades.

Two men gather up and replace 1500 paper cuspidors partly filled with sand, containing a small amount of chlorinated lime.

During the day such cuspidors as need attention are replaced by the sweepers in their particular sections. The soiled cuspidors are removed to a dump rather than sent to the incinerator as the sand in them smothers the fire. It may be interesting to know that the paper cuspidors are more economical than crockery, and their use does away with washing or rinsing. A yearly saving of approximately $1100 has been effected by the use of paper cuspidors.

The factory office building with its polished floors, desks, brasswork and cabinets, tiled washrooms and toilets, is cleaned by a specially trained force both day and night.

One man handles towels for factory offices and shop, delivering and collecting daily in the offices and twice a week in the shop.

Employes in offices are furnished with small face towels free of charge.

Employes in the shop may purchase a towel at cost and as long thereafter as they remain in the employ of the company they may receive twice a week a clean towel in exchange for a soiled one.

The towel man also cleans and disinfects each week all factory telephones, cleans bulletin boards and safety mirrors which hang in dangerous passageways.

A general helper is employed to keep an accurate account of all supplies received and given out by the department, assist the towel man, mix liquid soap and disenfect solutions, spray insect destroyers, etc.

Metal cans about the size of a barrel marked with the word "Rubbish" together with the numbers of building and floor where located are placed throughout the factory for sweepers to deposit sweepings in, and are used by all employes for rubbish. In some instances special cans are provided for oily waste. These cans are then emptied into large iron rocker dump bodies on wheels, capacity of 9 cubic feet, which are removed twice in twenty-four hours, or more often if necessary, by means of elevators and electric trucks. This rubbish is sent to an incinerator.

State Laws of Sanitation

In addition to maintaining plant sanitation, the sanitary department is also held responsible for provision of adequate toilet and washing facilities, in compliance with state rules and regulations. Moving of departments from one location to another, the changing from male to female help, etc. requires considerable vigilance to keep the matter within the law. The Massachusetts' laws relative to the removal or elimination of dust are not very severe and most employers without any criticism from a factory inspector, have provided more suction hoods and ventilating systems than the law requires.

In England the laws are very strict and require that the air must not contain above a certain percentage of dust. An installation of a ventilating system in a mill room in England, must, upon completion, pass the requirements of the Board of Health and the British rubber manufacturers have given a great deal of thought to the subject of ventilation.

Ventilation of Mills

The ventilation of their mills is obtained by the use of a Keith-Blackman 15 inch pressure fan, running at 1120 R.P.M. The volume of air displaced by this fan is approximately

FILLING DUMP BODIES IN THE FACTORY

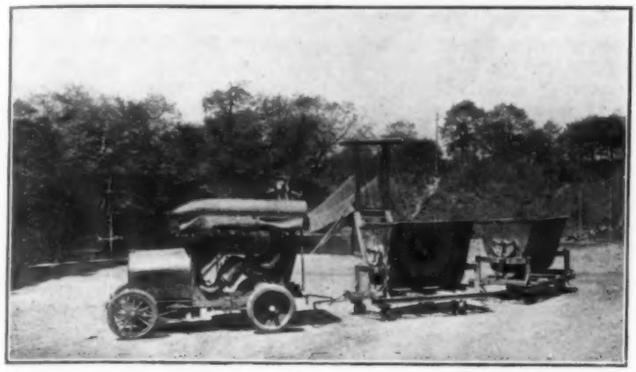
4,000 cubic feet per minute. The size of the opening at the back of the mill is 48 inches long and 1 inch deep. A fan, as described, supplies three 48 inch mills.

Cleaning the Mill Room

It is generally conceded by those familiar with rubber factories that one of the hardest problems to contend with in connection with cleaning, is the mill room.

In one rubber factory in this country several exhaustive studies have been made in connection with the cleaning and ventilating of mill rooms. These studies may be briefly summarized as follows:

It was found that soapstone rises to the ceiling and is held in suspension while more stable compounds rise about 8 feet and then settle. To ascertain the amount of soapstone and other compounds in the air, small sheets of cardboard were



YARD TRACTOR HAULING DUMP BODIES

placed to determine the plane of greatest deposits at levels as follows:

Floor—5 feet (workmen's breathing plane)—9 feet—12 feet—18 feet.

The result of twenty-four hour periods showed that the main heavily loaded strata lies from 10 feet down to the floor. At a plane of 5 feet deposits were found to the value of $1.32 per day. The material (under microscope) proved to be a mixture of carbon black, zinc oxide and sulphur.

A study was then started of the air currents both in the room and in the suction system used for conveying the dust from the mills. This test was made by means of an anomometer. No strong air currents appeared at any point in the free air of the room. The main tests were at the peak and edge of each hood over the mills. Maximum velocity at the peak was found to be 1,450 feet per minute with such a dissipation of suction that at the edge of the hoods the velocity was reduced to 275 feet. This, proved by observation and tests, is not sufficient to draw the dust and waste matter which rises at the edge of the hood.

Great variation was found in velocity at different outlets and proof was secured that the system was not working 100 per cent. At one hood no current of air was found.

As a result of this investigation the capacity of the fan was increased and better results were obtained.

I believe it is not necessary for me to go into further details of the ventilating system as this subject was fully described at the last Safety Congress. Conditions were also improved materially by closer supervision of the mill operators.

Efficient Remedies

The following remedies were applied with good results:

1. At mixing mills—racks of trays were provided onto which mixed rubber from the mills is placed without dusting with soapstone.

2. Stock storage rooms—most of the dust can be eliminated by spraying the stock with wet soapstone from a churn by an atomizer.

3. At calender warming mills—all stock is kept on platforms off the floor. When excess stock is batched out and moved from the calender, same is put on trucks, using liners between sheets, which eliminates the use of soapstone from the calender room.

4. Spilled compounds—all batching compounds are delivered on trucks to the mills, six to eight pans per truck. These compounds are kept on the trucks until the rubber is broken down. Batch pans are set on the edge of the mill pan and minerals are shoveled onto the mills, one small scoop, at a time. Before dumping the batch pan on the mill roll, it should be nearly empty. Empty pans are placed back on the truck. No pans should be thrown on the floor.

5. Dust from mixing mills—emptying pans as mentioned in item No. 4, will keep down the dust to a remarkable extent. Most mills are hooded and the type of hood found to be most effective has for its main features the following:

It is very low.

Height of hood from mill proper is 12 inches.

Entire back of mill is closed in by sheet metal. Old style hoods are made more effective by attaching a canvas curtain to the back of the mill and keeping the curtain down at all times.

Dirt and dust can be controlled to a great extent by marking the different spaces around calenders for stock trucks, liners and shells. Keep all stock for warming mills on platforms off floor. Waste cans for paper, strings and torn or used tags are provided at each calender.

Disposition of Material Collected by Sweepers

Some of the material gathered up by the sweepers and the disposition made of same is as follows:

1. *Rubber and fabric.* This is removed from the rubbish and placed in special containers which are emptied and contents cared for by the scrap clearance department.

2. *Calender and Mill Pits.* These are cleaned when machines are idle, at present by hand, using pails and barrels. Oil and grease are transferred to a specially constructed, movable, metal tank (250 gallons) and are reused for lubricating purposes where an inferior grade of oil will answer the purpose. The rubber in the pits is sent to the washroom to be reclaimed if found fit for use. The residue in the pits is placed in heavily constructed barrels and carried to a dumping ground.

3. *Tube Room.* Tube transfers and worn out cloth wraps are placed in rubbish and burned at incinerator. Soapstone deposits in the bobbin machines is removed by the department and sent to dump.

4. *Mill, Motor and Heater Bases.* Grease is mixed with dry sawdust and removed with hoes, shovels, scrapers and stiff brooms. Where the oil runs down the side of the mill bases a bank of sand is made to prevent the oil from spreading about the floor.

5. *Elevators.* Pits not provided with drains are equipped with ejectors by which surplus water is removed, the residue is then mixed with dry sawdust and removed to a dump. Pits with drains are flushed with steam or water as often as necessary. Elevator shaftways are cleaned as often as condition requires, usually on a holiday or when the plant is shut down. This

RUBBISH ON THE WAY TO THE INCINERATOR

is usually a long tedious job, especially if the shaftway is not entirely enclosed for as dust is loosened it flies about and settles in all spaces adjacent to the shaftway which means that they, too, must be cleaned after the elevator is finished. An elevator operator is furnished by the elevator department who runs the elevator from the top of the building to the basement as required—the cleaners, some with long handled brushes, some with cloths, riding on top of the elevator cage. All men are furnished with goggles and respirators.

(Continued on page 10)

Waste Slate as a Filler in Rubber

An interesting report of investigations entered into by the Bureau of Mines,, of the Department of the Interior, has been recently submitted by Oliver Bowles, mineral technologist of the Bureau. The investigation had to do with the results obtained regarding the adaptability of pulverized waste slate as a filler in various products.

A previous report commented on the results obtained by using slate as a filler in road asphalt mixtures while the present report discusses its use as a filler in such product as paper, rubber, road asphalt, floor coverings, paints, etc. In commenting upon the adaptability of slate flour as a filler for rubber the report states as follows:

Adaptability to Rubber

Most of the pulverized slate submitted for testing as a rubber filler was of such fineness that 80 per cent would pass through a 200-mesh screen. Samples varying in weight from 3 to 10 pounds were submitted to twenty-seven rubber companies. Several companies which obtained favorable results from the small samples and desired to make tests on a larger scale were provided with 100 to 200 pound samples.

The details of one of the tests are given below. Slate flour was tested as a filler in comparison with soapstone. A physical examination revealed that the slate flour was coarser and less uniform than the soapstone used. The ingredients of the two compounds are shown in the following table.

Composition of Rubber Samples for Testing Purposes

Ingredients	Sample No. 1	Sample No. 2
Smoked sheets	40.0 per cent	40.0 per cent
Magnesium oxide	2.0	2.0
Sulphur	3.5	3.5
S apstone	54.5	...
Slate flour	....	54.5
Total	100.0	100.0

One-tenth inch slabs were press-cured for 75 minutes under 50-pound pressure. Stock containing the slate flour was very dark in color. The products were tested with the following results:

Result of Tests on Samples

Sample	Tensile Strength	Elongation
No. 1	1315 pounds	525 per cent
No. 2	774 "	270 per cent

These results indicate that slate flour is inferior to soapstone as a filler, though the coarseness of grain may have had some influence on the results obtained.

Eleven manufacturers of mechanical rubber goods found that slate flour was a satisfactory filler for such products as disks, sheet packings, molded shoe heels and soles, hard rubber battery jars, carriage tires, garden hose, clutch facings and similar products. Slate flour was used successfully as a substitute for whiting, clay, ground barytes and aluminum flake. A manufacturer of rubber footwear found that products in which slate was used compared favorably with those made from regular compounds in tensile strength, elongation, and accelerated or natural aging, but repeated stretching caused the rubber to break more readily than when regular compounds were employed. The chemist in charge of the tests concluded that this latter quality was due to the coarseness of the slate filler, and suggested that finer grinding would overcome the difficulty.

Detailed tests conducted by one manufacturer may be of interest. For comparative tests three rubbers were compounded, one containing 40 per cent whiting, a second 40 per cent clay, and a third 40 per cent slate flour. The results of tests made on the rubbers thus compounded are shown in the following table:

	Thickness	Elongation	Break, lbs.	Tensile strength, lbs.
Whiting as filler	176	9	58	850
" " "	176	8	46	680
Clay as filler	188	6½	80	850
" " "	188	6½	80	850
Slate flour as filler	160	9½	68	850
" " "	140	9½	56	800

The comment of the chemist who conducted the tests was that "slate flour shows up very well; if the price is low enough it can be used advantageously."

The difference of opinion evident from the reports as given above, may therefore, be largely due to insufficient grinding of the slate flour submitted for testing purposes. At the time most of the tests were made the Bureau found it impossible to obtain slate flour which would analyze finer than 80 per cent through 200 mesh. The results of the tests, together with opinions expressed by several rubber chemists, indicate that if slate flour of much finer grade had been used the results would have been more uniformly favorable. This is corroborated by the results obtained from one sample of fine material, as noted in the preceding paragraph.

The weight of evidence points to the probability that finely pulverized slate is a satisfactory filler for mechanical rubber goods, and it is important to note that it could be placed on the market at a price considerably lower than that of ordinary fillers now in use.

Keeping a Rubber Factory Clean

(Continued from page 9)

6. *Tunnels and drains.* In the absence of an ejector, the surplus water is bailed and the residue is then mixed with dry sawdust and removed to a dump. In some large drains screens are present. These screens are cleaned by means of a steam hose. *Note:* After cleaning, all pits and drains are disinfected.

7. *Conveyors.* Small conveyors are usually cleaned by hand by means of small bench brushes with dustpan. Large conveyors when attachments can be made, are blown out with compressed air and the dirt is swept up later. This can only be done when the plant is shut down.

8. *Large quantities of paper or wood.* Usually handled as Salvage and taken care of by the foremen in the department being sent to the salvage department for disposal. *Note:* Paper bags used for carbon black in the mill room are considered worthless and are bundled by sweepers and sent to incinerator.

9. *Metal chips.* These are placed in special metal containers, by sweepers, and foremen in department where they originate have them delivered to the salvage department.

10. *Water in basements.* When necessary to move it quickly this water is pushed into elevator pits by means of stiff brooms.

11. *Cleaning machines.* These are taken care of by employes in their own departments under direction of their own foremen.

12. *Box Shop.* The litter here is either wood, shavings, or sawdust and is handled in this department. This machinery being of such a dangerous nature it is deemed best to keep out all men not familiar with same.

13. *Oily waste and other fire hazards.* These accumulate when men from the maintenance departments work Sundays or holidays. Rubbish cans are placed in the yard at several entrances to buildings and men having material of this kind place it in cans when their work is finished. Cans are emptied by yard men.

Best Type of Help

Experience has shown that young men are not contented with this kind of work and men well advanced in life are not adapted to the work. To build up an efficient sanitary department every endeavor should be used to secure the middle aged men who are physically fit to remain on their feet a considerable portion of the day, doing a great amount of stair and ladder climbing, hauling cans of rubbish, etc. Such a force at work in a plant, with intelligent supervison, will maintain sanitary conditions, reduce cost of sweeping, increase plant efficiency and morale and reduce accidents to a minimum.

The Acceleration of Vulcanization by Organic Accelerators

By A. Maximoff

The following experiments were made in Moscow during the years 1914 to 1919 in the laboratory of the "Bogatyr" factory for the manufacture of rubber goods.

It seems to us that the investigators, who have already treated the question of organic accelerators, have not paid sufficient attention to the remarkable accelerating action that can be obtained with them.

The most powerful accelerators are able to reduce the time of vulcanization to about 1/100 of its normal value and in certain cases the reduction can be even as great as 1/1000 of the original time of vulcanization. The importance of the organic accelerators may be comprehended from the results of these tests. Moreover, not only do they present the possibility of obtaining new and important results in plant practice, but they are also of considerable scientific interest in that they open up new and large fields for the study of vulcanization.

I—*Preliminary Experiments*

Vulcanization with organic accelerators.—The most powerful accelerators are as follows:

1. Piperidine.
2. Secondary fatty amines.
3. Disulphide of thio-uramine.
4. Sulphide of thio-uramine.

The object of these experiments was to study the general action of these substances in the presence of metallic oxides.

At the beginning of these researches, it was stated that there is quite a great difference in the accelerating power of these bodies, according to whether they are mixed with metallic oxides or not. The presence of these oxides can cause the accelerating power to be increased 15 to 50 times its original value.

The program of tests was as follows:

1. The determination of the minimum quantity of sulphur necessary for the vulcanization in the hot condition in the presence of organic accelerators.
2. The influence of the nature of the metallic oxide used on the acceleration.
3. The study of the influence of certain additional products on the accelerating power of a given substance.
4. The determination of the minimum quantity of the accelerator which is sufficient practically to produce the maximum effect.
5. The determination of the minimum quantity of the metallic oxide in the mixture which allows the attainment of the total accelerating action in practice.

The vulcanization tests were carried out in molds in a vulcanizing press with steam at 15 to 30 lbs. pressure (1-2 kgms. per sq. inch).

The homogenous distribution of the constituents in the rubber composition was obtained by malaxing suitable quantities of two identical mixtures with this difference that one of them contained, in addition to the regular ingredients a large proportion of the accelerator that is being tested. In this way there is obtained very readily a mixture containing any desired quantity of the accelerator.

Thus in order to determine the minimum quantity of sulphur which would give a satisfactory action from the practical standpoint, we used the following two mixtures.

No. 35		No. 54	
Para Rubber	100 parts	Para Rubber	100 parts
Sulphur	3.5 "	Zinc oxide	1 "
Zinc Oxide	1 "	Accelerator	0.5 "
Accelerator	0.5 "	$C_6H_5N.(CH_3)_2$	1 "
$C_6H_5N.(CH_3)_2$ (dimethyl aniline)	1 "	(dimethyl aniline)	

Le Caoutchouc et la Gutta Percha 1921, 10944-10947.

In order to determine the minimum required quantity of the accelerator ,the following mixtures were used:

No. 114		No. 115	
Para Rubber	100 parts	Para Rubber	100 parts
Sulphur	1.5 "	Sulphur	1.5 "
Zinc oxide	1 "	Zinc oxide	1 "
Accelerator	0.5 "		

The composition of the mixtures cited above was established by an entire series of preliminary tests.

Conclusions Derived from Experiments

The conclusions, derived from the entire series of experiments, are as follows:

1. To obtain complete vulcanization from the practical standpoint, it is sufficient to use a quantity of sulphur equal to 1.4 per cent of the weight of the rubber. It is possible to reduce that quantity to 0.75 per cent and still obtain an efficient vulcanization.

2. Oxide of zinc of all the metallic oxides investigated was most effective in increasing the activity of the accelerator. Lead oxide (PbO) comes next. The oxides of magnesium (MgO), of calcium (CaO), of barium (BaO) and the trioxide of antimony (Sb_2O_3) have no such action at all.

3. The presence of a substance which has an acid reaction (resin) destroys the effect of the accelerator almost entirely. The presence of aniline, dimethyl aniline and phenol does not in itself promote the accelerating effect. In the presence of lead oxide these substances have, however, a very decided favorable action. Limestone ($CaCo_3$), antimony trisulphide (Sb_2S_3) and antimony pentasulphide (Sb_2S_5) do not appear to have much of an influence on the accelerating power.

4. The quantity of accelerator required to yield its maximum vulcanizing effect is about 0.25 per cent of the weight of the rubber, and in practice this is independent of the molecular weight of the accelerator.

The following mixture may be cited as an example.

Para Rubber	100 parts
Sulphur	1.5 "
Zinc oxide	1.0 "
Accelerator	0.25"

This mixture vulcanizes perfectly in 20 minutes with a steam pressure of 20 lbs. (1.33 kilograms per sq. cm.).

5. The minimum quantity of the metallic oxide, which is required to produce the maximum effect of the accelerator from the plant operation standpoint is:

For Zinc oxide	0.85 to 1.5 per cent of the weight of the rubber.
For Lead oxide	3.5 to 7 per cent of the weight of the rubber.

Hence, in this case 0.85 per cent of zinc oxide and 3.5 per cent of lead oxide produces equivalent results.

6. To verify the results obtained, the following mixture was compounded.

No. 166	
Para Rubber	100 parts
Sulphur	1.5 "
Zinc oxide	1.0 "
Accelerator	0.5 "

This mixture vulcanized for 15 minutes with steam at 20 lbs. pressure (1.3 kilograms per sq. cm.) and a sample of the vulcanized rubber gave the following results when tested.

Annular Test Piece

Diameter, external	33.75 mm.
Diameter. internal	25.00 mm.
Thickness	7.85 mm.
Resistance to rupture	74.3 Kgs. per sq. cm.
Elongation	825 per cent, that is 9.23 times the original length

After 10 minutes the permanent elongation measured 4 per cent.

The resistance to rupture, actually observed, is relatively low because of the small dimensions of the test piece. This could not be made in a larger piece because of the smallness of the testing machine. With normal sized samples a value of 190 kilograms per sq. cm. can be attained on the dynamometer.

II. The Determination of the Effective Action in the Process of Accelerating Vulcanization with the Derivatives of the Secondary Fatty Amines in the Presence of Metallic Oxides

In order to obtain the maximum action in the accelerators of the type which we have under consideration at the present time, the presence of lead oxide or zinc oxide is necessary. It is evident that it is not to the accelerators alone that the accelerating effect is due, but to the product of their reaction with the oxides and perhaps with the sulphur as well.

We can imagine three possible causes of the accelerated vulcanization, viz.,

1. The formation of combinations of the accelerators with sulphur which results in the formation of vulcanizing agents which are more active than sulphur itself.
2. The formation of compounds with sulphur or with metallic oxides, or with both sulphur and the oxides at one and the same time; the substances that are formed being more active accelerators.
3. The acceleration of the vulcanization due to the exothermic reaction between the sulphur and the metallic oxide with the assistance of the accelerator.

In order to solve the problem, the following mixture was made and experimented with. The mixture contained 5 grams of the product that is obtained by the combination of dimethylamine with CS_2, 10 grams of zinc oxide and 15 grams of rubber. This corresponds to mixture No. 114, mentioned above.

These substances were melted by heating them to 130 to 150 degrees C.; then the solidified melt was ground to the form of a powder and about 3 grams of the same were mixed with 100 grams of para rubber. The vulcanization proceed was permitted to last fifteen minutes. The pressure was 20 pounds or 1.3 kgs. per sq. cm.

Inasmuch as the total heat of the reaction was evolved at the time of the preliminary fusion of the vulcanizing ingredients, the hypothesis of an exothermic reaction during vulcanization between the sulphur, the zinc oxide and the accelerator can be disregarded. No heat is evolved during the course of the vulcanization process due to a combination of these ingredients, and the acceleration cannot be held as due to such a phenomenon.

The fused product, that was not used in the first vulcanization experiment, was extracted wih water, acetone, alcohol, carbon disulphide and chloroform. The latter solvent was the most efficient. From this extraction, there were isolated two substances, in addition to sulphur and the accelerator which was unchanged in the fusion. These substances had melting points of 127 and 242 to 245 degrees C.

When the first compound (M.P. 127 degrees C) was mixed with rubber in the proportion of 4 per cent, a rapid vulcanization of the same ensued. Under the same conditions, the second compound (M.P. 242 to 245 degrees C.) exhibited very marked accelerating properties in the absence of either zinc oxide or lead oxide.

Later tests showed that the first compound could be formed from the second compound by treatment with sulphur. The second compound was evidently the zinc salt of dimethyl dithiocarbamic acid. The acetone extraction of the fused product, mentioned above gave a resinous substance which could not be analyzed.

An interesting compound was isolated from the carbon disulphide extraction of the fused vulcanizing agent. This substance had a melting point of 116 to 118 degrees C. When mixed in the proportion of 4 per cent with para rubber, there was no vulcanizing action, provided there was no sulphur in the mixture, but if there was added about 4 per cent of sulphur and the same proportion of lead oxide (all calculated on the weight of the rubber), then vulcanization was rapid. After working at a pressure of 20 pounds for about 10 to 15 minutes, a product, possessing the yellowish color of lead oxide, was obtained. From this fact it was deduced that the vulcanization proceeded so rapidly that there was no time for the formation of the sulphide of lead which would have colored the product black. The author has not had the time to determine the exact nature of the compound, recovered from the CS_2 extraction, but it appears as if it is a composition of the zinc salt of dimethyl dithiocarbamic acid with a certain amount of sulphur. It has been possible to obtain a rubber, which did not become black in spite of the presence of lead oxide. by vulcanizing under special conditions with a mixture of sulphur and the zinc salt of dimethyl dithiocarbamic acid which corroborated the above experience. From these tests it was concluded that during the course of the vulcanization process, the accelerator in the presence of zinc oxide or lead oxide formed a zinc or a lead salt, which had a very marked effect in increasing the velocity of accelerating action.

III. Experiments with the Addition Product of CS_2 and Dimethylamine. The Sulphide and the Disulphide of Thio-Uramine. The Accelerating Action on the Vulcanization of Rubber.

In the preceding experiments, the product, that is formed by passing the vapors of dimethylamine into a solution of carbon disulphide in petroleum ether, was used. As we have mentioned above, this product appears to have exceedingly great accelerative properties, when mixed with lead oxide and zinc oxide. From a mere superficial examination, it was seen that this product was not a homogeneous substance. When it was treated with water, a part was found to be soluble and the rest did not dissolve even at the boiling point. The supposition was made, to start with, that this substance was formed of a mixture of two compounds, viz.

1. Dimethyl dithiocarbamic acid: $(NCH_3)_2.C.SH$ (S)
2. Dimethyl dithiocarbamate of dimethyl amine, $(NCH_3)_2.C.SH.NH(CH_3)_2$ (S)

The results of analysis did not, however, substantiate this hypothesis, for instead of two compounds, three compounds were found in the mixture, having the respective melting points of 78.5, 132 and 159 degrees C. From actual analysis, it was determined that these three compounds were:

1. Tetramethyl-thio-ures.
2. Dimethyl-dithio-carbamate of dimethylamine.
3. The disulphide of tetramethyl-thio-uramine.

1. Tetramethyl Thiourea. This compound was isolated by extraction of the crude product with methyl alcohol. It is easily soluble in water, alcohol and benzine and boils at 245 degrees C. without decomposition. When it is used in the following mixture:

Rubber	100 parts
Sulphur	3.5 parts
Zinc Oxide	2.0 parts
Tetramethyl thiourea	0.5 part

treatment for 15 minutes at 30 pounds pressure does not show any signs of vulcanization. This compound has no accelerative action at all and is merely an inert constituent of the mixture.

2. Dimethyl-dithiocarbamate of dimethylamine. This compound was obtained by the dry distillation of the crude accelerator. It is easily soluble in water, methyl alcohol, hot benzol. With zinc chloride it gave a white precipitate. It was used in a mixture, consisting of 100 parts of para rubber, 3.5 parts of sulphur, 2 parts of zinc oxide and 0.5 part of the substance itself which had a melting point of 132 degree C. After 15 minutes at a pressure of 2 kilograms per square centimeter complete vulcanization was obtained. When the precipitate ,that was obtained by treating the dimethylamine compound with lead acetate, was mixed in a proportion of 0.5 part to 100 parts of rubber and 3.5 parts of sulphur, then at the end of 15 minutes at a pressure of 2 kgs. per sq. cm. no appreciable vulcanization could be observed. On the other hand when lead oxide was added in the proportion of 4 parts of the oxide to 100 parts of the rubber, 3.5 parts of sulphur and 0.5 part of the lead salt of the accelerator, complete vulcanization ensued and a black product resulted. It therefore appears that this substance possesses accelerative powers, when used in conjunction with lead or zinc oxide.

(Continued on page 14)

ABSTRACTS

Technical — General — Commercial

New Vulcanizing Agents

E. Romani in the Giorn. Chim. Ind. Appl., 1921, pages 197 to 199 discusses some new vulcanizing agents which are known as thiouram disulphides. These organic substances are complex sulphur compounds and are made from dithio-carbamid acid by the action of iron chloride. The former compound is made by heating carbon disulphide and ammonia in an alcoholic solution. The compound used in the experiment was tetramethyl dithiocarbamide disulphide, whose formula is $N(CH_3)_2.CS.S.SCCS.N(CH_3)_2$. Other derivatives were used as well. The results of the experiments showed that a rapid vulcanization of rubber could be effected with these reagents without the addition of any sulphur. The action proved to be more energetic in the presence of certain metallic oxides, for example, zinc oxide. A mixture, consisting of 100 parts of rubber, 5 parts of the disulphide and 5 parts of zinc oxide vulcanized within 15 minutes at a temperature of 145 degrees C. (In heating the disulphide, it has been known for a long time that it splits up into carbon disulphide, sulphur and ammonium rhodamide. The liberation of sulphur probably accounts for the vulcanizing effects of the compound. EDITOR.

Impregnation of Textile Belts with Rubber

Austrian Patent No. 82,400, which has been granted to the Akteiselskabet Roulunds Fabriker of Odense, Denmark, is concerned with a process for impregnating textile belts and the like with gutta-percha, balata, rubber and other similar materials. The rubber is dissolved in a suitable solvent of the sort that is commonly used and mixed with the proper amount of a sulphonated vegetable oil. The object in adding this oil is to render the solution less viscuous and in this way to give it the proper degree of penetrating power. It was found that the addition of this reduced the viscosity of the solution to such a degree that the fibers in the belts were thoroughly saturated with the rubber or gutta-percha a thing which was impossible of attainment before the oils were added. Other substances may be added to the rubber solution, such as various fillers without in any way injuring the impregnation process. After the belts have been well saturated with the rubber, then they are vulcanized in the ordinary manner.

Separation of Rubber from Raw or Vulcanized Rubber Waste

German Patent No. 336,146 is concerned with a process for the separation of rubber from raw or vulcanized rubber waste by the action of certain solvents. The material is treated with hydrogenated phenols or derivatives of these phenolic compounds, such as cyclohexanone and its homologues, the cyclohexanols and their esters. These are used either alone or in admixture with other solvents. In comparison with the solvents that are ordinarily used in the treatment of rubber, the cyclohexanols possess the advantage of having a low inflammability, high solvent power and pleasant odor.

Rubber Cement for Rubber Shoes

Canadian Patent No. 209,580 treats of a liquid cement used in the manufacture of rubber shoes. This cement is made by dissolving about 15 parts by weight of Venezuela balata, 20 parts by weight of tumaka block balata and 15 parts by weight of solvent naphtha. The Venezuela balata is first boiled to cleanse, then it is rolled into sheets and a sheet of Venezuela balata is united to a sheet of tumaca block balata by heating the two. The composite sheet of balata is then dissolved in the naphtha by heating.

Cold Vulcanization of Rubber

In Chemiker Zeitung, 1921, page 567 (see also Gummi Zeitung, 1921, page 1071), there has appeared a letter, written by E. J. Mueller, in which a novel explanation of the cold vulcanization process is given. It is said that the vulcanization of rubber in the cold is to be explained as the formation of a turgoid solution. Turgoids are organic bodies which swell up under certain definite conditions, without going into solution. Typical turgoids are the textile fibers. A good example is ordinary celery, which when it is soft and tasteless, will swell up when placed in water to a hard firm mass, possessing an excellent flavor.

In the cold vulcanization process, rubber behaves just like a typical turgoid. The solid rubber is brought into contact with sulphur chloride in a solution of carbon disulphide or benzine, whereupon the rubber swells up to a certain extent. In this turgoidal condition, the rubber is able to absorb a certain amount of sulphur or sulphur chloride. However, as absorption is the same as solution, we must conclude that the rubber in the turgoidal condition can dissolve either sulphur chloride or sulphur, just as the textile fiber in the turgoidal condition can absorb dyestuffs dissolved in a proper medium. As a certain relation between the quantities of the reacting materials is necessary in the vulcanization process, an excess of the rubber must be present, in order to be able to form the proper turgoidal solid solution, which is known as vulcanization.

Vulcanizing Pads and Method of Curing and Shaping Articles of Rubberized Fabric

Canadian Patents Nos. 212,451 and 212,452 have been issued to the Canadian Consolidated Rubber Co. on the above matters.

In the first patent, the process is concerned with the formation of the rubberized fabric. This consists of layers of fibrous materials and non-vulcanizable plastic material intermingled and united together. The entire pad is coated with rubber and vulcanized. The fibrous material may be felt and the non-vulcanizable material may be non-curable rubber.

In the second patent, there is described a method for curing and shaping the vulcanizable fabric so as to prevent local weaknesses in the finished article. Heated presses are used to accomplish this. The patent has particular application to the manufacture of tires.

Rubber Composition

In British Patent No. 157,821, issued to the India Rubber, Guttapercha & Telegraph Works of Paris, there is described a process for the manufacture of a rubber composition which can be used to good advantage in the making of soles, heels, steam packings, etc. The composition consists of 50 parts of rubber, 10 parts of sulphur, 39 parts of old rubber ground up and one part of an accelerator, para-nitrosodimethyl aniline. The mixture is calendered and vulcanized for one hour under pressure at a temperature of 149 degrees C.

Ornamenting India Rubber Articles

In British Patent No. 165,200 there is described a process for decorating rubber goods by taking the vulcanized rubber articles and dipping them into any enamel solution. The rubber articles are then dried and the enamel is vulcanized. The next step is to immerse the article in naphtha which softens and expands the enamel and makes it rise from the surface and gives the article an irregularly woven surface. The article is then dried again. If necessary two coats of enamel may be given to the article before it is vulcanized.

Making Golf Balls

British Patent No. 166,618 is concerned with the design of a special form of mold to be used in the manufacture of golf balls. The mold is made of an extremely hard metal and is polished very highly. It is made very accurately so that the golf balls that are molded in it are more perfectly spherical in shape. The molds used for making what are known as "recessed" balls are furnished with a pip which is inserted after the mold has been hardened and ground to the finished diameter of the sphere. In this manner the very trying operation of cutting away the excess metal, left in the mold after the pipping operation, is avoided. After the mold blank has been drilled with a hole to the desired depth and of the required diameter, to give the proper outer surface of the golf ball, then it is hardened and ground on its outer diameter and finally finished off to a true sphere. The dimples or pimples on the ball, as they are called, are pressed to the same height above the surface, so that they are all exactly the same distance from the center of the ball, by the use of cylinders which are gauged to press the proper distance into the ball.

Electrically Heated Vulcanizer

The Apparatebaugesellschaft m.b.H., Baden-Oos has applied for a patent in Germany on an electrically heated vulcanizing apparatus. (Application No. 782,033). The apparatus is so arranged that it may be heated with a strong or weak current without the necessity of changing the heating elements. Either an alternating current, a direct current and a multiphase current may be used. There are two heating coils, which are used according to the strength of the current. The apparatus may attain the desired heat even with a voltage as low as 6 volts and up to a voltage as high as 300 volts.

Tire Beads Solutioning Apparatus

Canadian Patent No. 212,876 is concerned with an apparatus which is used for solutioning tire beads. This consists of a tank in which the solution is contained, a supporting frame for the annular beads which may be moved vertically so that the bead can be dipped into the solution and removed therefrom and a suitable form of die, which may be opened to receive the dipped bead and which also serves to remove the excess solution from the bead. The apparatus works automatically.

Rubber Filler

In British Patent No. 166,218 there is described a method of making a filler to be used for caoutchouc and caoutchouc like substances. The filler is a mixture of French clay, China clay, iron oxide, and magnesium carbonate with or without the addition of zinc oxide. The chalk and clay may each comprise 36 per cent of the total, the iron oxide 8 per cent and the magnesium carbonate 12 per cent. The mixtrue may be calcined, and in this event there may be added to the mixture before the calcination operation, a sufficient quantity of zinc white or zinc sulphide white to provide the desired proportion of zinc oxide in the mixture. In an alternative procedure, the mixtrue may be bleached by treating it with sulphuric acid and then washing out the acid. The zinc oxide may be added either before or after the bleaching process.

Tire Vulcanizer

United States Patent No. 1,387,381, assigned to The B. F. Goodrich Co., is concerned with a process and apparatus for vulcanizing tires, wherein it is possible to insert and remove the work rapidly. (See U. S. Patent No. 1,386,465).

The principles of the operation of the process are the same as those outlined in the former patent, but the apparatus is arranged in such a manner that it is more practical to operate and considerable time is saved in inserting and removing the tires. The reader is referred to the patent application for further details.

Tires Wound from Fabric Strip about Rubber Core

British Patent No. 166,152 is concerned with a method of making a tire, to be used on bassinettes, rickshaws and other light vehicles, wherein the tire is made from a strip of fabric, which is rolled about a rubber core. A plug is inserted in one end of the rubber core and after the tire is wound, the plug is fitted into the opposite end of the core, thus making a tight joint.

A Solid Tire with a Non Metallic Core

British Patent No. 166,051 describes a tire which has a solid inner core. The inner core is made from spong rubber or other resilient substance and is expanded to fit different covers by the use of different sizes of wedged shaped pieces.

The Acceleration of Vulcanization by Organic Accelerators

(Continued from page 12)

3. The disulphide of tetramethyl-thiouramine. This compound which has a melting point of 159 degrees C., was obtained either as a residue from the dry distillation of the crude accelerator or as the residue from the extraction of the accelerator with alcohol. It was purified by crystallization from benzine. The mother liquors were precipitated with alcohol. Its analysis showed that it contained one molecule of dimethyl-amine combined with one molecule of carbon disulphide. This compound is not dimethyldithiocarbamic acid as was thought in the first place. This has been proven by analysis and careful examination of its chemical properties and its powers of combination with other organic compounds and the products that are obtained in its decomposition. While lead acetate will give a precipitate with this substance, zinc chloride has no action on it. Complete vulcanization was obtained with a mixture consisting of

Para rubber	100 parts
Sulphur	3.5 parts
Zinc oxide	2 parts
The disulphide	0.5 part

when it is treated for 15 minutes at a pressure of 2 kilos per sq. cm.

On the other hand the precipitate, which the disulphide formed with lead acetate, did not cause vulcanization under the same conditions, but when lead oxide was added in addition then vulcanization took place substantially, the same as in the case of the zinc oxide test with the formation of a black vulcanized rubber. The proportions used in the mixture were:

Para rubber	100 parts
Sulphur	3.5 parts
Lead oxide	4.0 parts
Lead precipitate of the disulphide	0.5 parts

5. The sulphide of tetramethyl thiouramine. This substance was used in the mixture, consisting of

Para rubber	100 parts
Sulphur	3.5 parts
Zinc oxide	3 parts
The sulphide	0.5 parts

with the result that complete vulcanization took place under the same conditions as are indicated above.

From the experiments that have been described up to this point, it may be concluded that the sulphides and the disulphides of thio-uramine are excellent accelerators. Hence the product ,that is obtained by passing the vapors of dimethylamine into a solution of carbon disulphide in benzine or petroleum ether, owes its accelerative properties due to the fact that it contains dimethyldithiocarbamiate of dimethylamine and the disulphide of tetramethyl-thiouramine. The crude product generally contains 50 per cent of the disulphide of thiouramine, 30 per cent of the carbamate derivative and 20 per cent of tetramethylthiourea and other impurities.

(To be continued)

NEWS OF THE INDUSTRY

News -- Personals -- Financial -- Building Activities -- New Products

News of the Rubber Metropolis

Propose Schedule Changes in Akron—Seiberling Makes Offer for Portage—Interlocking to Resume Production—Goodyear to Redeem Bonds—Akron Balloon in International Race

Propose Schedule Changes in Akron

(Special Akron Correspondence)

Akron's great rubber companies are ready to join with other industries throughout the country in dividing working hours so that part-time jobs may be provided for the idle rubber workers in the city.

Unconfirmed reports circulated in labor circles the first of October hinted that the B. F. Goodrich Co. was to lead the way by cutting working shifts from ten and eleven hours to eight. The Goodrich plant was closed down the last week in September for the quarterly inventory and workers discussed rumors of proposed changes. Officials of the company gave out no statements regarding any plan for changes in working conditions in the factory.

The unemployment problem in Akron has not been acute since early last spring when the tire companies started to pick up with the increased demand for their product. This seasonable demand has passed and there has been a decrease in the production at most of the factories. When the recent survey was taken in the gathering of statistics for the unemployment conference at Washington, state employment bureau officers estimated that there were 14,000 men out of work here. A considerable number of the idle, however, are composed of unskilled laborers and building tradesmen.

Should the eight-hour shift be restored in all rubber factories, it is said that the unemployment situation would be greatly relieved. There is a feeling in Akron business circles that the demand for tires and other rubber products during the winter months will be greater than the manufacturers have estimated.

Seiberling Makes Offer for Portage

Frank A. Seiberling, former president of the Goodyear Tire & Rubber Co., will head a new concern to take over, own and operate the Portage Rubber Co., Barberton, if the approval of the Federal Court can be obtained.

Mr. Seiberling has proposed to George D. Bates, trustee for the Portage creditors and receiver of the property to purchase the property, and Bates together with his counsel, W. E. Young was scheduled to appear before Judge D. C. Westenhaver in Cleveland with an application for the court's sanction.

Negotiations looking toward the consummation of this deal, which in line with Mr. Seiberling's plan to return to the rubber industries on the large scale, have been in progress with receiver and various representatives of stockholders and creditors of the Portage Company for some weeks. It is understood that the court approval is all that is needed to put the Seiberling interests in possession of the property. All other parties have agreed, it is asserted.

It is announced on behalf of Mr. Seiberling, that he intends immediately to resume production with the Portage plant, in case the receiver is authorized to sell to him. This will mean re-employment for approximately 1500 men.

Portage stock was carried at a book value of $2,100,000. When reappraised recently its value was placed around $1,500,000. Mr. Seiberling's offer is half of the latter figure, payable in 7 per cent preferred stock, title to the common stock to revert to the holding company in turn, will own the fee of the Lehigh Rubber Co., which is operating the plant Mr. Seiberling recently acquired at New Castle, Pa.

Mr. Seiberling proposes, it is reported, to pay $750,000 in preferred stock to the fabric creditors of the Portage and the balance at the inventoried figure in cash to take care of the claims of other creditors and pay for the stock, fixtures, machinery, etc. at the plant.

Before the industrial and commercial slump arrived the Portage had contracted for many hundreds of thousands of pounds of cotton fabric at the peak prices. Then came the slump and the failure and the fabric creditors faced a loss aggregating more than $750,000 on the Portage account, but agreed to charge it off all but $750,000 and they have signified their willingness to deal with Seiberling in the manner indicated above.

The Portage deal, following closely on the heels of the purchase of the New Castle property, is regarded in rubber circles here as confirmatory of the impression that Mr. Seiberling is seeking a total production of around 10,000 tires a day before he has secured the capacity he regards as essential to his return to tire manufacture. The Portage has a capacity of 3,000 tires and 2,000 tubes a day, while the output of the Lehigh factory at New Castle is 2,000 tires and 4,000 tubes daily.

Interlocking to Resume Production

(Special Akron Correspondence)

The new management of the Interlocking Cord Tire Company, of Mogadore, Ohio, has announced that it hopes to resume tire production this month following the discharge of Elihu Harpham as receiver. Court action resulting in dismissal of the receivership followed announcement that an agreement has been reached by the new management whereby creditors' claims will be settled on a basis of a fifteen per cent payment in forty-five days and the balance in one and two years, secured by notes. The company is said to have $22,000 in cash, $13,600 in promissory notes and $7,200 in other notes with which to satisfy creditors' claims. Edward Kokl is president of the company.

Goodyear to Redeem Bonds

(Special Akron Correspondence)

Among the events which tend to show the improvement in business is the fact that the Goodyear Tire & Rubber Co. will redeem as per schedule on November 1, $750,000 face value of first mortgage bonds at 120.

The entire issue of $30,000,000 has twenty years to run and one of its main features is that the company shall redeem by lot $1,500,000 of these bonds annually at 120.

Figures showing the progress Goodyear has made under new management are unavailable, but it is understood that a large amount of cash has been accumulated as a result of good business during the spring and summer months.

Akron Balloon in International Race

Wade T. Van Ormand, pilot, and Willard Seiberling, aide, of the balloon "City of Akron" started in the International Balloon Race, for the James Gordon Bennett trophy from Brussels on September 18, getting away at 4:30 o'clock in the afternoon under intermittent showers and strong easterly winds. They descended the next evening near Exeter, Devonshire, England, after an exciting 400-mile trip across the English Channel to Southern England.

New Oldfield Tires

(Special Akron Correspondence)

Improvements in production methods which have cut down the cost have made it possible for the Oldfield Tire Company to put two sizes of Ford tires on the market at a greatly reduced price. It is announced that one of the new tires, a 30 by 3, will retail for $8.99. The other will be a 30 by 3½ inch casing retailing for $9.99. Both are fabric casings.

News from the Trenton Manufacturers

Trenton Rubber Plants Increase Production—Stanwood Rubber Refinancing Planned—Trenton Firms Exhibit at Fair—Economy Opens Branch—Ajax Wins Court Action

Trenton Plants Increase Production

Optimistic views of the present and future industrial situation are taken here by manufacturers of automobile tires and tubes and other rubber materials. Two local plants claim to be working at capacity and employing night shifts.

At the Ajax Rubber Co., Inc., plant maximum capacity is being maintained, the mill being operated tweny-four hours a day, six days a week. At least 6,000 tires are being shipped for two models of the Buick car, the Dodge, Oldsmobile and Briscoe machines.

There is no slack period in sight at the Ajax, according to Superintendent Mann, who said this morning that Ajax is enjoying fine business.

At the Bergougnan Rubber Corporation plant, 250 men are employed and the factory is working steady, with a night shift. Tires and tubes are manufactured exclusively. It is said that orders continue to come in and there is a likelihood of extra hands being put on.

The Ajax and Bergougnan plants are the two that have plenty of work on hand. Conditions are not quite so encouraging at some other rubber factories, but the depression in business that is being experienced has failed thus far to shake the optimism of the companies' heads.

At the Thermoid Rubber Co., it is announced that the plant is going along from day to day, with little assurance of what the morrow holds in store. Thus far orders have kept the plant operating at about sixty to seventy per cent maximum capacity. The bulk of the business is being done in tires, but the belting, brake lining and hose departments, it is claimed, are picking up.

Conditions at the Hamilton Rubber Manufacturing Company are reported as fair under the present conditions. The plant is operating, it is said, with sixty to seventy-five per cent of maximum capacity. While declaring that business is bad, the Hamilton officials are expressing a hopeful attitude. There is no immediate sign of improvement, they say, but it will come gradually.

About the same conditions prevail at the Empire Tire Company. This plant has been going along and is not offering complaint in view of general conditions.

Stanwood Refinancing Planned

(Special Trenton Correspondence)

The committee appointed to confer with John Kirkpatrick, of New Brunswick, N. J., receiver of the Stanwood Rubber Company, Elizabeth, N. J., has plans under way of re-financing the concern and getting it ready for operation again. The committee, which is composed of former Governor Foster M. Voorhees and Clark McK. Whittemore, of Elizabeth, N. J., Thomas M. Gardner, of Passaic, N. J., and J. G. Lamison and John Mattola, of New York City, has a plan to hold the property uncil conditions are more favorable for its sale at a fair price. The committee does not want to sacrifice the plant as a result of present economic conditions. The concern is located near New York, making it handy to receive raw material. The committee believes that the company will soon be on its feet and operating at a profit again.

An Oddity in Bicycle Tires

The accompanying illustration shows an oddity in bicycle tires which recently appeared in the West End, London. It is claimed that these tires make for easier riding, which can readily be granted, but the assertion that they are ten per cent speedier than the old type is something regarding which we are open to conviction.

(International)

UNIQUE BICYCLE TIRE RECENTLY INTRODUCED IN LONDON

Trenton Firms Exhibit at Fair

(Special Trenton Correspondence)

The Thermoid Rubber Company, Pocono Rubber Cloth Company, Puritan Rubber Company, Acme Rubber Manufacturing Company and the Semple Rubber Company had model exhibits at the Trenton, N. J. fair. The Thermoid Company presented miniature balloons to its hundreds of patrons at the exhibition booth.

Economy Opens Branch

(Special Trenton Correspondence)

The Economy Tire Protector Company, manufacturers of caterpillar tires, has opened a branch at 114 South Warren street, Trenton, N. J.

Ajax Wins Court Action

(Special Trenton Correspondence)

Justice F. S. Katzenbach, of the New Jersey Supreme Court, has decided in favor of the Ajax Rubber Company in the suit to compel the rubber concern to open a portion of St. Joes avenue, Trenton, N. J., to property owners applied to the Supreme Court for a writ to review the legality of the ordinance allowing the street to be closed.

Goodrich Semi-Pneumatic Truck Tire

The B. F. Goodrich Co., Akron, Ohio, has recently placed upon the market a truck tire which it contends may be the greatest improvement in truck tires that has put in an appearance in the past five years, the Semi-Pneumatic Truck Tire.

By virtue of its unique design, it possesses to so great a degree the ability of a properly inflated cord truck tire that this unique quality deserved more recognition than was suggested by the name cushion, hence the name semi-pneumatic.

The outside design of the tire is in every respect as effective as the internal design. A groove is molded in the tread for its entire circumference which helps to prevent skidding. In addition, there are a number of side blocks on the tread, designed to give traction in soft going. The side slots between the blocks add to the resilience of the tire and by breaking up and reducing the tractional wave materially reduce gasoline consumption.

Another important feature of this tire is the fact that the tire fits the standard S.A.E. wheel and that the regular solid tire press serves to apply the tire, eliminating all extra flanges and bolts and screws and special wheels, all of which add to the initial cost and increase the unsprung weight of the truck, which is uneconomical.

News from the Trade at Large

Dunlop to Open in January—Waukon to Locate in Elyria—Talbott Forms Tire Company—U. S. Branches Consolidate—McGraw Annual Sales Conference—Marathon Changes Title

Dunlop to Open in January

Some measure of relief from the present critical unemployment situation in Buffalo, N. Y., is promised by January 1st when the Dunlop Tire Corporation on the River road will stare operations with a force of 2,500 men.

George C. Lehman, secretary of the Chamber of Commerce told the Buffalo Real Estate board at a recent luncheon at the Iroquois that P. D. Saylor, general manager of the Dunlop corporation, had told him that operations would positively be started by January 1st of next year at the latest and perhaps at an earlier date.

It is understood that Mr. Saylor has left for England where he will complete some business details in connection with the opening.

Secretary Lehmann said that it was through the efforts of the Buffalo Chamber of Commerce that the Dunlop corporation had been induced to build the $25,000,000 plant in Buffalo.

Waukon to Locate in Elyria

The board of directors of the Waukon Rubber Company, a new corporation recently organized has announced its intention to build their new factory in Elyria, Ohio.

The Waukon Rubber Company will manufacture air cushion heels, rubber gloves, toy balloons, automobile tubes, and various other rubber specialties and close to one hundred and fifty people will be employed at the outset. The site for the factory has been determined upon, and the present quarters of the Hill Rubber Heel Company will be retained as a warehouse and packing department for the rubber heel division. Plans and specifications for the new factory are ready and contracts for the building will be let immediately. The new plant will be in operation late in December, if present plans are carried out.

J. W. Dewhurst, formerly secretary and treasurer of the Hill Rubber Heel Company, is to be secretary and general manager of the new company. O. S. Dollison, formerly general manager of the Hill Rubber Heel Company, is to be vice-president, director of finance and sales, and other officers announced by the board of directors are: W. R. Huntington, president; J. A. Ebert, treasurer.

Republic Suffers from Fire

Fire in the beading and molding rooms of the Republic Rubber Corporation's plant, Canton, Ohio, on September 12, damaged a large amount of material used in the building of tires, as well as doing some damage to the interior of the building.

The loss was estimated at from $15,000 to $20,000 by C. O. Tice, superintendent of the plant. The majority of this loss resulted from damaged material, consisting mostly of beading. A large amount of this material was destroyed.

While the blaze resulted in a part of the plant being idle for the remainder of the day, it was said the plant would be running full force again in the near future. The plant is now turning out 1,000 tires a day.

Firemen were greatly hampered in their work by the fumes and heavy smoke which filled the building.

Talbott Forms Tire Company

The Talbott Rubber Co., Springfield, Ohio, has elected the following temporary officers and directors:

President, Frank R. Talbott, vice president, J. W. Culley; secretary, R. S. Lucas; treasurer, C. A. Crummel, all of Springfield; directors, the officers and Roger Houston, South Charleston, Ohio, Dr. C. C. Craig, Urbana, Ohio, and George A. Talbott, Urbana, Ohio. Mr. Talbott was formerly treasurer and general manager of the Victor Rubber Co., Springfield.

The company will be a distributing organization and entirely a dealers' proposition. Tires will be made for it by the Cleveland Rubber Corporation Company of Cleveland.

An office will be opened at 114th street and Berea Road, Cleveland.

Kelly-Springfield Sells Real Estate

The Kelly-Springfield Tire Co. has sold the real estate on the northeast corner of Seventh Avenue and 57th Street, New York, to Charles K. Eagle of the firm of J. H. & C. K. Eagle, silk manufacturers, of New York, for an all-cash consideration of $700,000. The tire company purchased the property two years ago for $650,000, and thus makes a profit of $50,000. The Kelly-Springfield general offices are located on the southwest corner of Seventh Avenue and 57th Street and at 1710 Broadway.

U. S. Branches Consolidate

The consolidation of the two Pittsburgh branches of the United States Rubber Company was announced recently. The store and offices are now established at 110 Seventh street under one management. M. G. O'Hara, who was manager of one of the Pittsburgh branch stores before its consolidation, has been appointed assistant manager of all branch stores of the United States Rubber Company with offices in New York. J. C. Lockhart has been named manager of the consolidated branch store in Seventh street.

McGraw Annual Sales Conference

The annual sales conference of the McGraw Tire and Rubber Company was held at the Company's general sales offices in Cleveland September 13-16, with managers from all sales districts in attendance. The purpose of the meeting was to adopt new distributing policies which have been formulated for the ensuing sales year.

The McGraw Company is one of the large exclusive producers of casings and tubes, who a year ago when the slump hit the tire business, was incumbered with rubber and fabric inventories. It is stated by officials that through increased efficiency in the production and sales departments, the company has been able to absorb all of its surplus raw materials and is now producing at prevailing market costs.

Sales of casings and tubes have shown a marked increase month by month during the present year, unfilled orders on hand at this time being greatly in excess of 1920, and ample to maintain factory operations at maximum capacity for some time.

Marathon Changes Corporate Title

The corporate name of the Marathon Tire & Rubber Co., Cuyahoga Falls, Ohio, has been changed to the Marathon Co. according to a petition recently filed with the Ohio Secretary of State by Raymond D. Jenks, president of the company. A large part of the capacity of this plant is now being devoted to the manufacture of men's rubber belts.

Madison Offices Moved to Buffalo

To expedite orders and effect further economies, the Madison Tire & Rubber Company, Inc., opened October 1, 1921, move its general offices from 20 West 60 street, New York City, to its factories, Buffalo, N. Y. The New York branch will remain at 20 West 60 street to serve those patrons in the immediate territory.

It is requested that all mail, letters of inquiry, etc., be directed to the factories, Buffalo, N. Y.

New Crude Rubber Brokerage Firm

The Continental Crude Products Co. has opened an office at 98 Park Place, New York, and has engaged in the crude rubber brokerage business. William J. Ruppel is president and active manager of the new concern. He has been engaged in the crude rubber business for twenty-five years past, and for the past five years has been with the crude rubber department of Mitsui & Company Ltd., 65 Broadway.

Home Rubber Erects Warehouse

(Special Trenton Correspondence)

The Home Rubber Company, Trenton, N. J., has erected an iron storehouse at the Woolverton avenue plant to take care of increased business. The company is doing its own building.

Mid-West Meets at St. Louis

The September meeting of the Mid-West Rubber Manufacturers' Association was held at the Missouri Athletic Association, St. Louis, Mo. on September 13 with an attendance of fifty-nine members and guests—the largest recent meeting of the organization. It was the first meeting held outside of Chicago, and the Committee of St. Louis members had made every effort to make the meeting pleasant for those who came.

At a business meeting of sixteen regular members (that is representatives of tire manufacturers) held in the morning, at which the newly elected president, William W. Wuchter of the Nebraska Tire & Rubber Co., Omaha, Neb., presided for the first time since his election, R. W. Jackson, representing the Brunswick-Balke-Collender Company, read a letter relating to the tentative recommendations of the sub-committee of the Tire Division of the Rubber Association of America providing for a mileage guarantee up to 1,000 miles on pneumatic tires with no adjustment beyond 1,000 miles.

After much discussion an informal poll asked by President Wuchter showed that all manufacturers represented, except one, favored the plan, although the general proposition of a guarantee was characterized as pernicious and no more necessary than an guarantee on any other manufactured article beyond the ordinary guarantee of material and workmanship.

The sentiment of the various speakers appeared to be that any plan approaching the final elimination of mileage guarantees deserved support or, as one member observed, "a half a loaf is better than none". Several members expressed their intention to attend the general meeting of the Tire Division of the Rubber Association of America at New York on September 22.

The American Barytes Corporation of Eldon, Mo., was elected to associate membership.

The application of the McWade Tire & Rubber Company, Garrettsville, Ohio, for regular membership was received.

At the general meeting held after the luncheon the Hon. Cleveland A. Newton, representative from the 10th Congressional District of Missouri, spoke on "Taxation", and was given a rising vote of thanks on motion of S. J. Roy of the Hannibal Tire & Rubber Co., Hannibal, Mo.

Other speakers were John T. Christie, president of the Hawkeye Tire & Rubber Co., Des Moines, Iowa; A. W. Reid of Chicago, Western representative of the Cabarrus Cotton Mills, Kannapolis, N. C.; Thomas Follen, president of the Lion Tire & Rubber Co., La Fayette, Ind.; J. F. Budd of the Bibb Manufacturing Co.; John L. Williams of the Collinsville Zinc Co., Collinsville, Ind.; C. T. Fogle, of the American Barytes Corporation; G. W. Sneed of the Southern Acid & Sulphur Co., St. Louis, and Paul P. Parker, president of the Parker Tire & Rubber Co., Indianapolis, Ind.

Edward G. Gereke, of the Gereke-Allen Carton Co., St. Louis, proposed that in coming meetings associate members hold a separate meeting under an organization to be perfected in cooperation with General Manager Matthews. The associate members include the crude rubber, fabric, machinery and mill supply representatives. W. E. Wrisberg of the Newson Valve Company, St. Louis, supported this proposition. President Wuchter expressed his approval of the plan and such an organization will doubtless be formed.

President Wuchter appointed E. T. Meyer of F. R. Henderson & Co., Chicago, chairman of a committee on arrangements and entertainment for the next meeting which will be held in Chicago, October 11.

The St. Louis committee on entertainment was as follows:

F. W. Knoke, chairman, American Zinc Lead & Smelting Co.; G. W. Sneed, Southern Acid & Sulphur Co.; J. F. Budd, Bibb Mfg. Co.; W. L. Burgess, Surety Tire & Rubber Co.; E. H. Bohlmann, Cupples Co.; W. E. Wrisberg, Newson Valve Co.; and Edward G. Gereke, Gereke-Allen Carton Co.

Wesley E. Wilson, of the Akron Rubber Mold & Machine Co., Akron, Ohio, asked for a rising vote of thanks to the St. Louis Committee which was given. Chairman Knoke in acknowledgement responded briefly.

Boxes for the ball game had been reserved, but on account of a heavy rain which set in about one o'clock the game was postponed. Many members enjoyed automobile trips about the city arranged by the committee. Others visited some of the industrial plants.

On the menu card at each plate at the luncheon was printed the following greeting: "To our visitors: We are glad you came. We are sorry you go. Come again. St. Louis Committee."

New Firm May Locate in Wooster

The Surgeon's Rubber Glove Company has not given up its formerly announced intention of locating in Wooster, according to information recently made public.

Lee, R. Miller, who is to be the moving spirit in the organization, will come to Wooster, with the men who have been promoting the enterprise, and a meeting will be held with Wooster Board of Trade officials.

New Location for Mid-West

The office of the Mid-West Rubber Manufacturers' Association has been removed to 607 South Wabash Avenue, (first floor), Chicago, from its former location in the McCormick Building, 332 South Michigan Avenue.

Lowell Enlarges Business

The Lowell Equipment Manufacturing Co., Lowell, Mass. has purchased the business heretofore known as the Auto Tire Vulcanizing Co., Inc. C. R. Kimball is the vice president and manager of sales. The high standard of Lowell tire repair equipment will be maintained, and the line will be extended from time to time.

Babson Predicts Prosperity in 1922

Roger W. Babson, of Wellesley Hills, Mass., nationally prominent as an economist and statistician, in a recent address before 300 business men gathered in Boston from all parts of the country showed by charts and figures that a period of marked prosperity and rapidly improving business conditions, beginning early next spring and continuing for many months, was bound to occur. This period, he predicts, will be marked by great business activity, full employment of labor and general commercial prosperity.

In his opinion liquidation has not yet touched bottom in all lines, although he realized that some commodities, particularly cottons, woolens, lumber and farm products, were retailing at prices fundamentally too low.

Alluding to the tire industry he said that liquidation had proceeded to a point where tire stocks were reduced to a minimum and that production is now being carried forward with extreme caution. He believed conditions in the industry would grow steadily better, although slowly perhaps, until spring.

He declared that the recovery of the tire industry has been retared principally by the reluctance of automobile manufacturers to lower their prices to 1917 levels, but that in their latest reductions they had practically returned to prewar prices —a movement that should have a decidedly stimulating effect on the tire industry.

Mr. Babson has a realistic way of picturing business conditions. In one of his charts based on the study and analysis of business histories for many years past, he says that business moves from the peak of prosperity through twelve cycles to extreme depression and back again to prosperity. He gave these cycles as follows:

1. Peak of prosperity; large profits and wages.
2. Inefficiency, declining bonds.
3. Dishonesty; declining stock prices.
4. Crime wave; declining commercial prices.
5. Lack of confidence; general unemployment.
6. Breaking up of homes; declining real estate prices.
7. Increasing thrift; lower money rates.
8. Greater efficiency; increasing bond prices.
9. Honesty, fair prices; increasing stock prices.
10. Religious interest; increasing commercial prices.
11. Activity in all lines; labor fully employed.
12. Prosperity; increased money rates.

He explained that business is now between cycle 5 and cycle 6.

In the United States, he said, a business depression goes over the country like a storm, starting in the East or Northeast and heading West, occasionally jumping entire localities. The present depression which started in the East has now spent its force in this section where business has already improved appreciably.

Cassel Sales Manager for Tuscora

One of the recent additions to the forces of the Tuscora Rubber Co., of Dover, Ohio, is Henry Cassel who on August 20 became sales manager of the firm.

Mr. Cassel has had long experience in the tire business and has been identified with a number of the leaders in the field. He first entered the tire field as sales promotion manager at Philadelphia for the Firestone Tire & Rubber Co. He then became identified with the Portage Rub-

HENRY CASSEL

ber Co. as New York manager and following that he joined the forces of the Amazon Rubber Co. in the capacity of sales manager.

Myers Comments on Foreign Trade

Walter E. Myers, president of the Denman-Myers Cord Tire Co., of Cleveland and Warren, Ohio, returned October 3 from his European trip. He sailed on the Olympic August 13 and attended the Ecumenical Council in London September 6 to 15, and then visited France, Holland and Belgium where he studied business conditions particularly in respect to the tire export trade.

In a recent interview Mr. Myers said:

"American manufacturers for the present, at least, must depend upon domestic markets to consume their output unless a field can be found in nations not affected by the war.

"There is no want in the allied countries, no lack of food and no unemployment excepting in England. The pall of sadness which is a physic result of the war has not yet lifted from France or Belgium, but it is not a depression due to economic conditions or lack of occupation, he asserted.

"Holland has the happiest, most prosperous and thriving people one can imagine. With the prosperity brought them by sale of supplies to the nations during the war, there has been no business depression as an after effect, and everyone is busy and cheerful."

His conclusions on the economic situation of the other countries in brief follows:

France—There is no unemployment. The people, with the factories not yet having had the opportunity to gather much momentum, have turned to agriculture or to the rebuilding of the devastated region. They have enough food.

Belgium—The people are prosperous and happy aside from the purely emotional depression which is an effect of the war. That has not yet dissipated. Everyone is working. Like France they lack the money to rehabilitate their industries. Men and women, however, are kept busy in the fields and they are producing their own foods.

England—There is much unemployment, but no want because the men out of work are being cared for by unemployment insurance. England is disturbed internally by labor troubles. Few pleasure automobiles are running because the high cost of gasoline and the high taxes make the expense prohibitive to any but the extremely wealthy.

"The export trade will revive slowly in all these countries," Mr. Myers said.

Death of Nathaniel Myers

Nathaniel Myers, Advisory Counsel to the United States Rubber Co., died in New York August 29 at the age of seventy-three. He was a native of St. Louis and was admitted to the bar in Missouri when nineteen years of age. He was widely interested in Hebrew philanthropies and was president of the Hebrew Technical School for Girls at Fifteenth street and Second Ave., New York. He had been connected with the legal department of the United States Rubber Co., for many years.

Stillman Addresses Akron Men

C. A. Stillman, secretary of the Goodyear Tire & Rubber Co., Akron, addressed the Akron Real Estate Board at their noon luncheon on September 19, this being his first public appearance since he took up his duties at the Goodyear plant. He devoted his remarks largely to the housing situation in Akron.

Receiver for Owen Tire

Manton M. Scott of Cleveland has been appointed receiver for the Owen Tire & Rubber Co., of Bedford, Ohio, on application of some of the larger stockholders.

Nearly $1,000,000 worth of the company's stock is owned in Stareo and Welty & Burt of Canton were attorneys for a committee of stockholders which was attempting to effect a reorganization. No decison has been reached as to future operation of the plant.

Oliver Now in Singapore

J. William Oliver of the crude rubber firm of Oliver, Keeler & Scudder arrived in Singapore October 3 where he will spend several weeks.

Madison Inaugurates Changes

A general expansion program has recently been inaugurated by the Madison Tire & Rubber Company, Buffalo, N. Y., which is of interest to the trade.

In view of the re-organization of this company, completed late last year, the progress reported at the present time is extremely encouraging. Many economies in selling have been effected. Their branches have all been eliminated without impairing service. The tread of their tire has been

J. M. DINE

improved, making it more sturdy than the former tread. The officials of the company state that their finances are in excellent shape and that the expansion of their distributors organization is based on the substantial financial condition of the company.

Joe M. Dine, general sales manager, recently with the Oldfield Company, has been elected vice-president of the Madison Company, in charge of sales. Frank H. Brewster who has been with the company, as superintendent for twenty years, has been elected vice-president in charge of production. Charles B. Brewster whose services with the company date back to 1913 has been elected assistant-treasurer. Fred Griscomb who has been with the company for twenty-two years is the chief engineer.

Ewing Rubber Sells Plant

(Special Trenton Correspondence)

The Ewing Rubber Company, Trenton, N. J. has sold its plant to Milton Mirkins, of Trenton. The latter will have the plant remodeled, install machinery and begin the manufacture of rubber goods. The mill, which was partly destroyed by fire some time ago, is located on a tract 206 by 235 feet. The Ewing Company was engaged in the manufacture of auto tubes and other rubber goods.

News of the Rubber Association

Proofers Adopt Code System for Statistical Work—Claims for Indemnity on Loss of Insured and C.O.D. Parcels—Reduction in Tire Ratings

Proofers Adopt Code System for Statistical Work

Although the Rubber Proofers' Division was one of the pioneers of the Association's divisional organizations to realize the importance of sales and production statistics and place in operation a monthly statistical plan, which is handled by the Rubber Association office, the plan was not conducted under a code system such as is in use in connection with the monthly automobile tire statistics, mechanical goods sales statistics, etc.

However, at a meeting held on September 14, it was decided to follow the general practice of the other divisions of the Association in work of this nature and the Association office was requested to prepare a code system under which the work will be carried on.

The use of the code method in this statistical work will positively preclude the possibility of the figures furnished by any one individual manufacturer becoming public property, as the only one holding the key to the code will be the General Manager of the Association, and as is a practice in other divisions of the Association, the reports rendered by the individual proofers will be returned to them with copies of the total reports prepared in the Association office.

Claims for Indemnity on Loss of Insured and C.O.D. Parcels

As a result of discussion of the subject by the Traffic Committee at its July regular meeting, the Traffic Department of the Association made an investigation, on behalf of members, of the basis for the settlement of claims by the United States Post Office Department for loss of insured and C.O.D. parcels.

The Traffic Department has received detailed information respecting this matter and will be pleased to furinsh it to any member upon request.

Effective Date of Reduced Canadian Ratings on Pneumatic Tires

In the previous issue of *The Rubber Industry*, members were informed of the recent order of the Canadian Board of Railroad Commissioners granting the application of Canadian tire manufacturers for the establishment of a third-class rating on pneumatic tires in carloads, minimum weight 20,000 pounds, and the establishment of first-class rating on pneumatic tires in less than car-loads in paper wrapped bundles or bales when strapped with metal bands.

The Traffic Department of the Association has just received advice that September 10, 1921, has been fixed as the effective date of this order.

Reduction in Mississippi Ratings on Tires

As a result of the application of the Traffic Committee of the Association the Mississippi State Classification has been amended, effective October 15, 1921, placing pneumatic and solid tire ratings in carloads and less than carloads on the same basis as the Southern Classification.

The principal item of interest in this connection is the fact that this change will permit tire manufacturers to ship pneumatic tires in less than carloads in paper wrapped bales or bundles at first-class rating, and in carloads at third-class. Under this amendement to the classification, solid tires attached to iron or steel bases may be shipped loose or in crates.

Formerly, both solid and pneumatic tires had to be boxed or crated, taking first-class rating, any quantity.

Greer Heads McGraw Branch

A recent change in the sales personnel of the McGraw Tire & Rubber Company is the appointment of J. H. Greer to the position of manager of the company's Kansas City branch, succeeding W. S. Chambers who recently resigned.

Mr. Greer has had fourteen years' experience in the tire business. During this time he has served as branch manager for several prominent tire companies, among them being the United States, for whom he functioned as branch manager at Kansas City, Mo.

While his most intimate trade acquaintence is in the Southwest, Mr. Greer is also well known with jobbing accounts throughout other parts of the United States.

New Star Tire

Announcement has been made by the Star Rubber Co., Akron, of the new "Comet" tire which is made only in 30 x 3 and 30 x 3½ fabric.

Different from the other Star fabric casings, which are cured on air bags, the same as cords, this tire is cured on an iron core, which is permissible because of the simple, but effective non-skid design.

They are regular standard size, made of good materials, but are selling at an exceptionally low price which accounts for the unusual demand evidenced immediately after their original announcement.

Refinancing Avalon Rubber

Arrangements are being made to procure funds to liquidate the indebtedness of the Avalon Rubber Manufacturing Co. of Akron, Ohio, and also to furnish working capital to put them on a profitable production basis. The main offices of this company are in the People's Saving & Trust Building, Akron, and they have operated plants at Barberton and Sterling, Ohio, on rubber heels and small molded and mechanical goods.

Erie Tire Audit Filed

Receiver R. H. Greenlee of the Erie Tire & Rubber Co., Sandusky, Ohio, has filed with the United States Court at Toledo a complete audit of the affairs of the company from its organization to June 30, 1921 showing that its assets are about $800,000 in excess of its liabilities. Total assets amount to $4,334,-392.34 and probable liabilities $4,328,-391.94.

Referring to the audit, Receiver Greenlee shows that there are assets in his hands of approximately $1,165,002.-62; that the claims, as filed against the company in United States court amount to $628,046.29, making an excess of assets over liabilities of approximately $536,000; that in addition thereto, there will be approximately $186,000 realized from the assets not shown by the audit to be valuable assets, so that the probable assets are in excess of liabilities in the sum of approximately $800,000.

Among the accounts listed as receivable and due and not taken over by the receiver as valuable assets are the following: from L. A. Subers, $90,253.50, on which the receiver says the account is collaterally secured by real property in the city of Cleveland, the receiver believeing that of the account at least $25,000 should be realized; from P. F. Wills, (former president of the company) $94,257.43; from C. H. Roth, $24,629.-88; from C. H. Berlekamp, $3,235.70.

The accountant in his statement to the receiver says:

"It will be noted that the current assets, including the inventories, amount to the sum of $657,074.17 while the established and accrued current liabilities amount to only $339,286.45, showing conclusively that it will not be necessary, at any time, to dispose of any of the fixed assets of the company to liquidate any and all of the claims pending against the company for which value received has been obtained."

New Financing for Fort Wayne

The Chamber of Commerce of Orrville, Ohio, recently voted to back the issuance of bonds for $75,000 to provide new buildings and equipment for the Wayne Tire & Rubber Co. of Orrville, which plans to engage in the manufacture of Cord tires.

The plant has been in operation at capacity during the depression.

Truck Completes Continental Run

(Special Akron Correspondence)

The Goodyear six-wheel truck which started recently on the first cross country journey ever made by a multiple wheel vehicle, has arrived at Los Angeles, Cal., with an actual running time of seven days, eleven hours and thirty-five minutes.

Not a sign of mechanical difficulty was met with, the engine performing perfectly, according to the report sent back by M. D. Scott, in charge. Scott took two drivers and a mechanician with him, the drivers working in shifts and sleeping in the car. The six wheeler is driven from the four rear wheels.

Tire Production Estimated

The *Monthly Business Review* issued by the Federal Reserve Bank in Cleveland, Ohio, for September contains an article on the rubber industry in which is included the following list of rubber factories in the Fourth Federal Reserve District, in operation at the present time, with figures showing the actual production capacity of automobile casings and (incomplete, inner tube production figures:

Company	Address	Actual Capacity Production Per Day Casings	Tubes
Appolo Tire & Rubber Co.	Cleveland, Ohio	250	200
Ashland Tire & Rubber Co.	Ashland, Ohio	1,000	1,500
American Rubber & Tire Co.	Akron, Ohio	1,000	1,000
Amazon Rubber Co.	Akron, Ohio	300	1,000
Corona Cord Tire Co.	East Butler, Pa.	500	2,000
Cord Tire Corporation	Chester, W. Va.	500	
Columbus Tire & Rubber Co.	Columbus, Ohio	500	800
Continental Rubber Works	Erie, Pa.	350	3,000
Columbia Tire and Rubber Co.	Columbiana, Ohio	600*	
Denman-Myers Cord Tire Co.	Cleveland, Ohio	500	500
Dayton Rubber Mfg. Co.	Dayton, Ohio	1,000	3,000
Excel Rubber Co.	Wadsworth, Ohio	300	200
Erie Tire & Rubber Co.	Sandusky, Ohio	200	
Firestone Tire & Rubber Co.	Akron, Ohio	27,500	29,000
Fidelity Tire & Rubber Co.	Massillon, Ohio	500	
Falls Rubber Co.	Cuyahoga Falls, O.	400*	
Giant Tire & Rubber Co.	Findlay, Ohio	800	800
Goodyear Tire & Rubber Co.	Akron, Ohio	35,800	42,000
B. F. Goodrich Co.	Akron, Ohio	30,000†	30,000
General Tire & Rubber Co.	Akron, Ohio	1,500*	
Henderson Tire & Rubber Co.	Columbus, Ohio	1,500	
India Tire & Rubber Co.	Akron, Ohio	500	800
Ideal Tire & Rubber Co.	Cleveland, Ohio	1,000	600
Kelly Springfield Tire & Rubber Co. (Akron Plant)	Akron, Ohio	3,000	
Lancaster Tire & Rubber Co.	Columbus, Ohio	400	400
Liberty Airless Tire Corp.	Carey, Ohio	500	
Lehigh Rubber Co.	New Castle, Pa.	2,000	3,000
McKone Tire & Rubber Co.	Millersburg, Ohio	350	
Mohawk Rubber Co.	Akron, Ohio	800	
Miller Rubber Co.	Akron, Ohio	4,850	7,000
Monarch Rubber Co.	Hartville, Ohio	500	
Midland Tire & Rubber Co.	Coshocton, Ohio	350	350
Meyers Rubber Co.	Columbiana, Ohio	150	
Mason Tire & Rubber Co.	Kent, Ohio	2,500	2,500
Marathon Tire & Rubber Co.	Cuyahoga Falls, O.	400	350
Mansfield Tire & Rubber Co.	Mansfield, Ohio	2,500*	
McLean Tire & Rubber Co.	East Liverpool, O.	750	800
McGraw Tire & Rubber Co.	Cleveland, Ohio	3,500	5,000
McCreary Tire & Rubber Co.	Indiana, Pa.	150	150
New Tread Tire Co.	Columbiana, Ohio	750	500
Owen Tire & Rubber Co.	Cleveland, Ohio	2,000	1,000
Pharis Tire & Rubber Co.	Newark, Ohio	500	300
Pennsylvania Rubber Co.	Jeanette, Pa.	2,500	3,000
Rubber Products Co.	Barberton, Ohio	300	300
Republic Rubber Corporation	Youngstown, Ohio	3,700	3,000
Swinehart Tire & Rubber Co.	Akron, Ohio	300*	575
Star Rubber Co.	Akron, Ohio	600	1,000
Standard Tire Co.	Willoughby, Ohio	325	250
Victor Rubber Co.	Springfield, Ohio	700	600
Total		140,875	Incomplete

* Estimated capacity production per day.

† Large production of boots and shoes, mechanical rubber goods, hard rubber goods, druggists' and stationers' sundries and rubberized fabrics.

Exports of Rubber Goods for August

Exports of rubber goods for August 1921 show a decrease when compared to the export figures for July 1921 according to the statistics recently issued by the Bureau of Foreign and Domestic Commerce of the Department of Commerce. According to the figures the value of rubber goods exported during August, exclusive of exports to Porto Rico and Hawaii, amounted to $2,411,191 as compared to $2,718,680 for July. Exports to Porto Rico and Hawaii for August amounted to $257,400, a decided gain when compared to a total of $166,476 for July.

The total value of the various articles exported, exclusive of those to the islands in question, were as follows: belting, $80,358; hose, $108,117; packing, $35,233; boots, $52,168; shoes, $184,279; druggists' rubber sundries, $49,995; soles and heels, $27,550; auto tire casings, $992,123; inner tubes, $114,074; solid tires, $113,184; all other tires, $22,338; all other manufactures of rubber, $325,943; insulated wire and cables, $305,829.

Exports to Porto Rico and Hawaii were as follows: belting, hose and packing, $6,012; automobile tires, $185,661; all other tires, $266; all other manufactures of rubber, $65,461.

How Akron was Named

Akron, Ohio, the Rubber City, was so-called because it was the highest point of land on the line of the canal between Lake Erie and the Ohio River. The name Akron comes from the Greek word signifying "high" or "heighth", and was so named by General Perkins, who, in connection with the Paul Williams Fund, founded the village of Akron in 1825. The name was suggested by Charles Olcott of Medina, Ohio.

General Perkins owned a large tract of land in Portage township, and foresaw that the construction of the canal with the large number of locks necessary for its operation together with the lockage waterpower at Akron would be likely to make the place a manufacturing, commercial and shipping center. How well his foresight was justified is evidenced by growth and development of Akron to its present proportions.

The Deutschland's Crude Rubber Cargoes

The so-called submarine "freighter" *Deutschland* which blew up at Birkenhead, England, on September 9, while being dismantled, recalls the anxiety that prevailed in the crude rubber trade in 1916 when this boat made two round trips from Germany to the United States bringing over cargoes of aniline dyestuffs and drugs variously estimated at from $10,000,000 to $25,000,000 in value and carrying back cargoes of crude rubber and nickel—the two commidities most needed by the German Government in the conduct of the war and the supplies of which had been entirely cut off by the British blockade of German ports and the embargoes on export from the British Empire.

Crude rubber had by 1916 become so scarce in Germany that it was practically impossible to manufacture tires, and spring wheels were said to have been substituted on many vehicles. Real tires were reserved for the automobiles of high army officers.

On its first trip in July, 1916, the *Deutschland* landed at Baltimore and loaded all its available space with crude rubber and nickel. The loading was closely watched by agents of the British government, and pressure was put on all American holders of these commodities to prevent their selling to German agents. The guaranties required by the British Government against selling crude rubber grown in the British Empire for reshipment from the United States protected British rubber, but this ban did not extend to Dutch rubber. Quite a good deal of the latter was brought into the country for reshipment by the submarine freighter to Germany, but as a matter of fact the undersea craft only carried two cargoes —one from Baltimore and another in November the same year from, New London, Conn.

The weights carried naturally were not large in proportion to Germany's needs probably not over 500 tons being carried on each trip, but even such amounts meant a great deal to Germany just at that time.

Two or three members of the New York crude rubber trade were suspected by the British Government of having furnished rubber for these shipments and were cut off from receiving British rubber, and for a time there was fear that the British Government might cancel the modification of the embargo by which American rubber manufacturers were able to obtain their supplies of British grown rubber.

Protest Wage Reduction

(Special Akron Correspondence)

Workers at the Akron plants of the Goodyear Tire & Rubber Co. have protested the recent cut of twelve per cent in wages. The protests were voiced in a recent meeting of the industrial assembly of the factory. Some of the men took the attitude that the cut was not warranted inasmuch as efficiency in the production department has been greatly increased. It also was maintained that the average reduction in the cost of living has not kept pace with the cuts in wages.

MARKETS

Manufactured Rubber Goods

NEW YORK, OCTOBER 5, 1921

Conditions throughout the country seem to be improving and all indications seem to point to a decided increase in business after the first of the year. Roger W. Babson, the eminent statistician has recently come forward with figures to prove that 1922 will see an upward tendency. Other authorities have voiced the opinion that liquidation has in large measure been accomplished in the various lines of industry. Best of all the feeling of pessimism is giving way to a spirit of optimism.

Conditions seem to be improving in the rubber industry. Reports from Trenton continue to be of an encouraging nature while those from Akron are far better than they were during the early summer.

Tire production has slumped somewhat but it is a natural decrease common to the time of year and is not caused by any other condition save the usual seasonal lack of demand.

Business in mechanical rubber goods remains unchanged. The railroads still remain aloof and are continuing their policy of reducing expenditures to a minimum. The long-expected and hoped for buying of replacement materials has not as yet materialized but the continued postponement cannot be continued much longer. Sooner or later buying must take place and with it will come a boom for the mechanical rubber goods industry.

Sales of rubberized clothing seem to be on the increase and word has been received that a number of plants in this branch of the industry are increasing production to a decided extent.

Buying in the rubber footwear industry still remains sub-normal. This is due to the fact that the mild winter of 1920-21 left the great majority of retailers in an over-stocked condition.

With the approach of winter there has been a noticeable improvement in the demand for hot water bottles and this improvement seems to have spread to other lines of druggists' rubber sundries.

Cottons, Yarns and Fabrics

New York, October 5, 1921

The rise in the cotton market has been the outstanding feature of all the commodity markets. Some important factors in the textile trade were of the opinion that prices would have a marked decline after speculation had run its course and the first fear of a serious shortage had passed away. All this was changed, however, as the high price level was maintained into October and the opinion of these same important factors now is that high cotton prices will continue.

At the present writing the stock of raw cotton in the mills is considerably below normal. As a result there has been a marked revision upward of prices of most cotton goods during the last two weeks.

It is well at this time to keep in mind the wide-spread effect of the advance in cotton on our entire domestic situation. Last June the entire economic situation of the South was discouraged with cotton selling at 11 cents a pound. This threatening condition is now passing away with the rapid liquidation of frozen loans and the resulting improvement in the banking situation, with a consequent increased capacity of the entire South to aid in the restoration of normal business.

The consumption of raw cotton throughout the country during August showed a substantial increase over that of the previous month, and was only 4 per cent below that of a year ago. The cotton consumed during August amounted to 467,108 bales of lint and 50,871 of linters compared with 483,560 of lint and 49,412 of linters in August, 1920. The stock of raw cotton on hand August 31 in consuming establishments was 1,002,981 bales of lint and 188,937 of linters and in public storage and at compressors 3,480,783 bales of lint and 241,333 of linters.

Cotton prices as of October 3 follow:

	Open.	High.	Low.	Close.
Oct.	20.75	21.80	20.60	20.85
Dec.	20.90	21.95	20.00	20.90@20.95
Jan.	20.80	21.60	19.70	20.66@20.68
March	20.55	21.60	19.75	20.42
May	20.05	21.00	19.20	19.94@19.95
July	19.44	20.20	18.80	19.45

EGYPTIAN COTTON

The tone of the market for Egyptian cotton has greatly improved both in quantity and prices paid since the great advance in the prices for the domestic commodity. There has been large buying of good-fair and fully-good-fair Uppers and a fair business in Sakels.

DRILLS, SHEETINGS AND OSNABURGS

Prices on practically all constructions advanced during the fortnight and good business was reported at the advancing prices. Important factors who were of the opinion a week ago that prices would not maintain at the higher levels now feel that with the serious cotton shortage prices may work to even a higher level. Sellers are showing every confidence in the present prices and look for an advance upon publication of the cotton report next week.

Good business is reported in 40 inch, 2.85 sheetings at 13 cents net. A price of 11 cents net was asked on 40 inch, 3.75 yard. Some were asking 11¼ cents net for their number.

Drills have been fairly active. The market on 37 inch, 3.95 yard was considered at 10½ cents net. For 37 inch, 3.50 yard 11¼ cents net was paid.

A reported shortage of 50 per cent in the jute crop has made for unusual prices. Some factors hold that this shortage cannot fail to have the effect of maintaining prices at a high level. Business is in small quantities.

Current quotations on the various fabrics used in the rubber industry are as follows:

TIRE FABRICS (Square Woven)			
17¼-ounce Sea Island, combed,	lb.	1.05	@ —
17¼-ounce Egyptian uppers, combed,	lb.	.90	@ .95
17¼-ounce Egyptian uppers, carded	lb.	.85	@ .90
17¼-ounce Sakellarides, combed	lb.	.80	@ .85
17¼-ounce Sakellarides, carded,	lb.	.75	@ .80
17¼-ounce Peelers, combed,	lb.	.90	@ .95
17¼-ounce Peelers, carded,	lb.	.60	@ .65
CORD FABRICS			
Combed Sakellarides	lb.	.90	@ .95
Carded Sakellarides	lb.	.85	@ .90
Combed Peeler	lb.	.95	@ —
Carded Peeler	lb.	.85	@ .90
Carded Arizona	lb.	.85	@ .90
Combed Egyptian uppers	lb.	.95	@ —
Carded Egyptian uppers	lb.	.85	@ —
DUCKS			
Belting (pound basis)	lb.	.36	@ —
Hose (pound basis)	lb.	.36	@ —
*Enameling	lb.	.37	@ —
Shoe Ducks	lb.	.42	@ —
Single filling	yd.	.17	@ —
Double filling	yd.	.18	@ —
DRILLS			
37-inch 3.25-yard	yd.	.12½	@ —
37-inch 2.75-yard	yd.	.13	@ —
37-inch 3.00-yard	yd.	.13	@ —
37-inch 3.50-yard	yd.	.11¼	@ —
37-inch 3.95-yard	yd.	.10½	@ —
OSNABURGS			
30-inch 7-ounce		.12½	@ —
40-inch 7-ounce		.14½	@ —
SHEETINGS			
40-inch 2.50-yard	yd.	.14	@ —
40-inch 2.85-yard	yd.	.13	@ —
40-inch 3.15-yard	yd.	.14	@ —
40-inch 3.60-yard	yd.	.12½	@ —
40-inch 3.75-yard	yd.	.11	@ —
40-inch 4.25-yard	yd.	.10	@ —
BURLAPS (Carload Lots)			
7 -ounce 40-inch	yd.	4.25	@ —
7½-ounce 40-inch		4.40	@ —
7¼-ounce 45-inch		4.00	@ —
10 -ounce 40-inch		5.80	@ —
10 -ounce 36-inch		4.20	@ —
8 -ounce 40-inch		4.45	@ —
10 -ounce 45-inch		6.50	@ —
10½-ounce 40-inch		5.90	@ —

Chemicals and Compounding Materials

THE GENERAL MARKET—OCTOBER 5, 1921—Inquiries continue to improve and potentially there is much to make for a continued, steady improvement over the fall. Selling prices in most cases are at replacement costs or below and as yet buyers only come into the market to meet immediate requirements. During the last period prices were well maintained and showed a tendency to firm higher. A further improvement in general business, particularly in the textile and tire trades, would bring a strong call for liberal quantities of stock and quantity buying would make for much higher prices of most items. The continued unsatisfactory state of exchange has resulted in a number of large German manufacturers withdrawing from this market for the time being.

ACCELERATORS

Organic

Aldehyde ammonia, crystals	lb.	$ .95 @	1.00
Aniline oil, bulk basis,	lb.	.18 @	—
Excellerex,	lb.	.55 @	.65
Formaldehyde-aniline	lb.	.55 @	.60
Hexamethylene-tetramine (powdered)	lb.	.75 @	.80
Paraphenylene-diamine	lb.	— @	—
Thiocarb-anilid	lb.	.55 @	.60
Vulcocene	lb.	.35 @	..

Inorganic

Lead, dry red, bbls.	lb.	.08 @	.08¼
Lead, sublimed white	lb.	.07¼ @	.07½
white, basic carbonate	lb.	.06½ @	.07¼
Litharge, commercial, bbls.	lb.	.07½ @	.07¾
Lime, hydrated	lb.	.03 @	—
Magnesia, calcined, extra light	lb.	.60 @	.65
heavy	lb.	.06 @	.07
Magnesite, powdered	ton	50.00 @	65.00

COLORS

Blacks

Bone, powdered	lb.	.06½ @	.08½
Carbon black	lb.	.10½ @	.20
Drop	lb.	.07½ @	.16
Ivory	lb.	.15 @	.45
Lampblack	lb.	.17 @	.45

Blues

Prussian	lb.	.50 @	.60
Ultramarine	lb.	.10 @	.35
Cobalt	lb.	.25 @	.30
Rubber maker's blue	lb.	3.50 @	..

Browns

Iron oxide	lb.	.04 @	.05
Sienna, Italian, raw and burnt	lb.	.06 @	.07
Umber, Turkey, raw and burnt	lb.	.05½ @	.07

Greens

Chrome, light, c. p.	lb.	.32 @	.34
medium	lb.	.34 @	.39
dark	lb.	.43 @	.47
oxide	lb.	.55 @	.65

Reds

Antimony, crimson	lb.	.40 @	.50
golden	lb.	.25 @	.30
red	lb.	.23 @	.26
Indian, pure,	lb.	.12 @	.17
Oxide, copperas, pure	lb.	.14 @	—
reduced	lb.	.11½ @	.12½
Para toner	100 lb.	1.40 @	—
Toluidine toner	lb.	2.75 @	3.10
Tuscan	lb.	.17½ @	.30
Venetian	lb.	.03½ @	.06½
Vermillion, English, quicksilver	lb.	.95 @	1.00
domestic	lb.	.25 @	.30

Whites

Albalith	lb.	.06 @	.06¼
Aluminum bronze	lb.	.60 @	.65
Lithopone, Beckton white	lb.	.06¼ @	—
Lithopone, domestic (factory)	lb.	.06¼ @	—
Zinc oxide, American Horse Head Special	lb.	.08 @	.08½
XX red	lb.	.07½ @	.08
Zinc oxide, French process, White seal	lb.	.11 @	.11¼
Green seal	lb.	.09¾ @	.10¼
Red seal	lb.	.08¾ @	.09¼

Yellows

Cadmium sulphide	lb.	1.25 @	1.50
Chrome, light, c. p.	lb.	.18 @	—
dark	lb.	.18 @	—
medium	lb.	.18 @	—
Ocher, French	lb.	.03½ @	.04
domestic strong	lb.	.03 @	.05
Zinc chromate	lb.	.37 @	—

COMPOUNDING INGREDIENTS

Aluminum flake	ton	25.00 @	35.00
hydrate	ton	22.00 @	25.00
Ammonium carbonate, powdered	lb.	.06 @	.09
Barium dust	ton	100.00 @	—
Barytes, Southern off-color,	ton	20.00 @	—
Western, prime white,	ton	23.00 @	—
Basofor	lb.	.04½ @	—
Beta-naphtol, technical	lb.	.33 @	—
Blanc fixe, dry, f.o.b. works	lb.	.03½ @	—
Chalk, precipitated, extra light	lb.	.03½ @	.04¼
heavy	lb.	.02½ @	.03¼
Clay, China, domestic,	ton	7.50 @	9.00
imported	ton	16.00 @	24.00
Dixie	ton	22.00 @	35.00
Blue Ridge	ton	22.00 @	35.00
Fuller's Earth, powdered	ton	22.00 @	25.00
Fossil flour	ton	60.00 @	..
Glues, extra white	lb.	.30 @	.40
medium white	lb.	.22 @	.28
cabinet	lb.	.18 @	.32
cabinet low grade	lb.	.15 @	.18
common bone	lb.	.09 @	.14
Graphite flake, bbls.	lb.	.14 @	.20
powdered	lb.	.04 @	.10
Ground glass, fine	lb.	.03½ @	.04
Infusorial earth, powdered	ton	60.00 @	—
bolted	ton	65.00 @	—
Liquid rubber	lb.	.15 @	—
Rotten Stone	lb.	.02½ @	.04½
Silica (aluminum)	ton	25.00 @	30.00
Soapstone, powdered	ton	15.00 @	20.00
Starch, powdered corn	cwt.	2.33 @	—
Talc, domestic	ton	18.00 @	20.00
French	ton	22.50 @	30.00
French, high grade	ton	40.00 @	45.00
Italian	ton	40.00 @	45.00
Terra Alba, American No. 1	cwt.	1.85 @	2.00
American No. 2	cwt.	1.25 @	..
Tripoli	ton	— @	—
Whiting, domestic	cwt.	.75 @	.80
Quaker	ton	13.00 @	15.00
English cliffstone	cwt.	1.70 @	1.90
glider's bolted	cwt.	1.20 @	1.35
Paris white American	ton	35.00 @	—
Zinc Oxide— 5 per cent leaded		.07¼ @	.07¾
10 per cent lead sulphate	lb.	.07 @	.07½
20 per cent lead sulphate	lb.	.07 @	.07½
35 per cent lead sulphate	lb.	.07 @	.07½

MINERAL RUBBER

Gilsonite	ton	70.00 @	—
Genasco (c. l. factory)	ton	50.00 @	—
(l. c. l. factory)	ton	52.00 @	—
Hard hydrocarbon	ton	33.00 @	45.00
Soft hydrocarbon	ton	30.00 @	40.00
M. R. X.	ton	— @	—
Pioneer (c. l. factory)	ton	35.00 @	60.00
Raven M. R.	ton	— @	—
320 M. P. hydrocarbon (c. l. factory)	ton	50.00 @	55.00
(l. c. l. factory)	ton	57.50 @	—
300/310 M. P. hydrocarbon (c. l. factory)	ton	40.00 @	—
(l. c. l. factory	ton	45.00 @	—
Synpro, granulated, M. R. (factory)	ton	64.50 @	—

SOFTENERS

Acids

Acetic, 28 per cent	lb.	.02¼ @	.03
Carbolic (phenol)	lb.	.09½ @	.16
Cresylic, 97 to 99 p. c. pale	gal.	.70 @	.75
Muriatic, 20 degrees	cwt.	1.40 @	2.00
Nitric, 36 degrees	cwt.	5.50 @	6.50
Sulphuric, 66 degrees	ton	18.00 @	20.00
60 degrees, bulk	ton	11.00 @	12.00
Tartaric, crystals	lb.	.35 @	—

Alkalies

Caustic soda, 76 p.c.	cwt.	4.00 @	4.15
soda ash, 58 p. c.	cwt.	2.10 @	2.15

Oils

Castor, No. 3, bbls.	lb.	.10 @	—
Corn, crude, bbls.	lb.	.09½ @	—
refined	lb.	.10 @	.10½
Chinawood, bbls.	lb.	.13 @	—
Cottonseed,	lb.	.08½ @	.09
Glycerine, c.p. drums	lb.	.14½ @	.15
Linseed, carload spot	gal.	.73 @	—
bbls.	gal.	.76 @	—
Palm, Niger	lb.	.06½ @	—
Lagos	lb.	.07½ @	.07¾
Peanut, domestic crude	lb.	.09 @	.09½
Pine, steam distilled, over 930° sp. gr.	gal.	1.20 @	—
Rapeseed, refined	gal.	.90 @	—
blown	gal.	.95 @	—
Rosin, first rectified	gal.	.37 @	—
second rectified	gal.	.39 @	—
Tar, commercial	gal.	.31½ @	—
Soya Bean, crude, bbls.	lb.	.08¾ @	—

Resins and Pitches

Cantella gum	lb.	.50 @	..
Cumar resin	lb.	.09 @	.13
Tar, retort	bbl.	11.00 @	—
kiln burned	bbl.	11.00 @	—
Pitch, Burgundy	lb.	.05 @	.06
coal tar	ton	20.00 @	—
rosin	bbl.	5.85 @	—
Rosin, grade B. ex-yard	bbl.	5.55 @	—
grade K	bbl.	6.45 @	—
Shellac, fine orange	lb.	.90 @	—

Solvents

Acetone, drums, c.p.	lb.	.12½ @	.13
Alcohol, denatured, No. 1	gal.	.38 @	.40
Methyl, 95 per cent, drums	gal.	.60 @	.63
Ethyl, 190 proof, bbls.	gal.	4.70 @	4.80
Benzol, 90 per cent	lb.	.25 @	.30
pure	lb.	.27 @	.40
Carbon bisulphide,	lb.	.06 @	.07½
tetrachloride	lb.	.10 @	.12
Dimethylaniline	lb.	.42 @	.50
Naptha, motor gasoline, steel bbls.	gal.	.23 @	—
Tahuol, pure drums	gal.	.28 @	.30
Turpentine, spirits	gal.	.77 @	—
wood	gal.	.74 @	—
Xylol, pure	gal.	.40 @	.43
commercial	gal.	.28 @	.35

Waxes

Beeswax white, pure	lb.	.38 @	.41
Carnauba, No. 1	lb.	.46 @	.47
Ceresin, white	lb.	.09 @	.10
Bayberry	lb.	.19½ @	.20
Montan, crude	lb.	.05 @	.06
Ozokerite, hard, pure,	lb.	.25 @	.26
Paraffin,	lb.	.03½ @	.08
Petrolatum, amber, bbls.	lb.	.05 @	.05½
dark amber,	lb.	.04½ @	—

SUBSTITUTES

Black	lb.	.08 @	.14
White	lb.	.09 @	.16
Brown	lb.	.11 @	.15
Brown factice	lb.	.07 @	.14
White factice	lb.	.08½ @	.16
Paragol, soft and medium	cwt.	6.81 @	—
hard	cwt.	6.81 @	—

VULCANIZING INGREDIENTS

Lead, black hyposulphite (black hypo)	lb.	.40 @	—
Orange mineral, domestic	lb.	.11 @	.13
Sulphur chloride (jugs)	lb.	.20 @	—
Sulphur flour Brooklyn brand (c.l.)	cwt.	— @	—
Brooklyn brand (l.c.l.)	cwt.	— @	—
Bergenport (c.l.)	cwt.	2.55 @	—
pure soft	cwt.	2.30 @	—
superfine (c.l.)	cwt.	— @	—

Litharge—Some improvement was reported but in the main the demand continued about even with the supply. Prices remained the same: In casks, 7½ to 7¾ cents per pound; 100 pound kegs, 12.25 cents per pound.

Lithopone—Leading manufacturers report that business is very satisfactory with stocks moving in good volume. The present price of lithopone is close to the cost of production. Imported goods continue to come in but users of the German article say that the quality is not up to the pre-war standard. Domestic could be had at 6¼ cents in carload lots.

Zinc Oxide—Liberal consumption of zinc oxide in the tire industry has been a large factor in the strength of the market. A good demand is noticeable and the feeling is that present prices will maintain and gradually work higher.

Talc—There continues a good demand for both domestic and foreign talc. Stocks in consumers hands are reported as being well absorbed and there does not seem to be very large accumulation of either brand. Domestic producers quote from $18.00 to $20.00 per ton according to quantity.

Soya Bean Oil—Prices firmed up in this market during the past week crude oil in barrel lots advancing ¾ cents a pound. Stocks of this oil have been light for months. In barrel lots 8¾ cents a pound is quoted.

Linseed Oil—Domestic linseed oil reached 80 cents per gallon since the first of the month but reacted this last week to 73 cents per gallon.

Caustic Soda—An excellent demand has prevailed and standard brands are in none too generous supply. Prices are on the average 10 cents per hundred pounds higher than at the last period and consumers are showing a tendency to anticipate their requirements.

Soda Ash—Inquiries are coming in in good number and while orders are for less than carload lots the demand is better. The market has held very firm. The majority of dealers quoted at $2.10 to $2.15 per 100 pounds. for light ash on spot.

Carbon Tetrachloride—Demand is spotty and prices are practically unchanged.

Aniline Oil—Improvement in the general business conditions has made for more active interest in this commodity. There seems to be large stocks on hand and offerings were made at 17½ to 18½ cents.

Benzol—The increased activity of the steel mills has resulted in better supplies of benzol coming into the market. Production is still only about 20 per cent of normal. Prices remain 25 to 31 cents per gallon for 90 per cent and 27 to 33 cents for pure.

Barytes—There was only slight demand for this material some factors being of the opinion that there would be some price cutting this month. Actual business is confined to spot and prompt shipment material buyers showing no interest except in their immediate wants.

Blanc Fixe—The character of the market remains the same with the demand light. Dry is quoted at 3½ to 3¾ cents.

Carbon Eisulphide—The demand by the rubber trade made for activity in this market. Good size orders was the rule with prices firm at 6 cents to 7½ cents per pound.

Crude Rubber

New York, Oct. 5, 1921

The crude rubber market during the past fortnight has been firmly maintained and prices on standard grades have moved upward from ½ cent to 1 cent per pound. As was anticipated, the demand from the factories has been gradually increasing. Stocks in the hands of all but the largest manufacturers have been consumed, and the factories are not only buying spot for immediate needs, but are taking more interest in future positions in anticipation of good business the coming winter and spring.

Buying is still very cautious, and the firmer tone of the market has not yet had any radical effect on prices. But the tendency is upward. Advices from primary markets indicate that prices there are holding firm—in fact at this writing the market in the Far East is higher than the domestic market, which, of course, causes replacement values to hold firm in this market.

Reports from the primary markets continue to indicate that the position of latex is easy as compared with that of ribbed smoked sheets. This tendency has been noted in recent months, and has been reflected in transactions on the New York market. Latex is bid at 15 cents with 15½ cents quoted as the seller's price.

Amber crepes continue to show a slightly firmer position with No. 1 quoted at 14¼ cents, No. 2 at 13¼ cents and No. 3 at 12¼ cents.

Paras stocks are evidently small and strongly held. Prices on Up-river Fine have moved up from 1 cent to 1½ cents. Holders take a firm position with what appears to be a sound argument that with the constantly decreasing importations of South American grades there is found to be a shortage in the not remote future.

Sterling exchange has varied during the fortnight from 3.71⅝ to 3.73⅝

Latest advices from London state that stocks there October 1 were 72,200 tons indicating a decrease.

Current quotations on standard grades are as follows:

Plantations			
Ribbed Smoked sheets, spot	.15¼	@	.15½
November	.15⅛	@	—
Oct.-Dec.	.15⅜	@	—
Jan.-Mar.	.16¼	@	.16½
Jan.-June	.16½	@	.16¾
April-June	.17	@	.17¼
Smoked sheet plain, spot	.12	@	.12¼
First latex pale crepe, spot	.15½	@	.15¾
November latex	.15½	@	.15¾
Oct-Dec. latex	.15¾	@	.16
Amber crepe, No. 1	.14	@	.14¼
Amber crepe, No. 2	.13	@	.13¼
Amber crepe, No. 3	.12	@	.12¼
Grand Central crepe	.11¼	@	.11½
Clean thin brown crepe	.12¾	@	.13
Light clean thin brown	.13¼	@	.13½
Rolled brown crepe	.12	@	.12¼
Paras			
Maderia Fine	.23	@	.23½
Acre fine	.22	@	—
Up-river fine	.21	@	.21½
Up-river medium	.17	@	.17½
Up-river coarse	.11½	@	.11¾
Islands fine	.18¼	@	.18½
Islands coarse	.10	@	.10¼
Caucho ball	.11¾	@	.12
Cameta	.09	@	.09½
Xingu Ball	.10	@	.10½
Tapajos fine, spot	.17½	@	.18
Pontianac			
Prime Pressed	.11¼	@	—
Plantation	.06	@	—
Bangermassin	.06¾	@	nom.
Palembang	.09¾	@	—
Gutta Percha Gutta Siak	.15¼	@	—
Prime MaCassar	2.60	@	—
Balata			
Panama Block	.30	@	nom.
Surinam Sheets	.65	@	—
Columbian Block	.41	@	nom.
Venezuelan Block	.54½	@	.55

Scrap Rubber

New York, October 5, 1921

The period of inaction in the scrap rubber market continues, and prices remain at the low point practically unchanged since our last report. Reclaims are out of the market for the time being, but in this line also the slow climb of crude rubber prices upward is eagerly watched.

Quotations are nominally as follows:

Auto tire peelings	.01¼	@	.01⅜
Standard White auto	.01⅛	@	.01¾
Mixed auto	.00⅝	@	.00¾
Bicycle tires	.00½	@	.00⅝
Solid truck tires	.01	@	.01⅛
Boots and Shoes	.03¼	@	.03½
Arctics, trimmed	.01⅝	@	.01¾
Arctics, untrimmed	.01⅛	@	.01¼
Inner tubes, No. 1	.04	@	.04½
Inner tubes, compounded	.02	@	.02¼
Battery jars, black compounded	Nominal		
Batteryjars, No. 1 bright fracture	"		
Inner tubes, red	.02	@	.02⅜
Heels and pads	Nominal		
Black mixed	.00¼	@	—
Garden hose	.00½	@	—
Air brake hose	.00½	@	—
Red packing	.01½	@	.01¾
Red mixed rubber	.02	@	—
White mixed rubber	.01¾	@	—

Reclaimed Rubber

New York, Oct. 5, 1921

There has been little change in the reclaimed rubber market during the past fortnight. Prices for some grades have been reduced somewhat. Should the tendency of crude rubber prices to increase become more marked, it will exercise a stimulating influence on the reclaimed business.

Quotations are nominally as follows:

Standard Reclaims			
Floating	$.12	@	$.13
Friction	.12	@	.13
Boots and Shoes	.10	@	.10½
Boots and Shoes (washed)	.13	@	.14
Mechanical	.08	@	.10
Hose	.10½	@	.11½
Tires, truck	.08	@	.09
Tires, auto	.09	@	.10
White	.13	@	.14

New York Stock Prices

Following are the New York Stock Exchange quotations on the various rubber stocks listed for October 4:

	Bid	Asked
Ajax Rubber Co.	23¼	23¾
Fisk Rubber Co.	11½	11¾
B. F. Goodrich Co.	31⅛	31½
do pfd 7	76	76½
Kelly-Springfield Tire Co.	42	42¼
Keystone Tire Co.	10½	10⅝
Lee Rubber & Tire Co.	26½	26¾
U. S. Rubber Co.	48¾	49
do 1st pfd	90	91

Akron Stock Prices

(Special Akron Correspondence)

Akron rubber stocks, having recovered a part of the loss suffered in the period of depression, are showing a tendency to hold their own and await developments in the trade, Such changes as have been noted tend for high levels. Preferred issues have the most attraction for investors. Hence their firmness.

Following are the quotations:

	Bid	Asked
Amer. R. & T. com	30	35
Amer. R. & T. pfd.	..	80
Amazon Rubber	10	20
Firestone T. & R. com	57	60
do 6 pct pfd.	81½	85
do 7 pct pfd.	71	74
General T. & R. com	190	210
do 7 pct pfd.	75	85
B. F. Goodrich com	32	33
do 7 pct pfd.	77	82
do 5 yr. 7 pct. notes	95	96¾
Goodyear T. & R. com	10	10¼
do 7 pct pfd.	26½	28
Goodyear 8's	103½	103¾
India Rubber com	65	75
do 8 pct pfd.	65	75
Mason T. & R. com	8	8½
do 7 pct pfd.	45	50
Marathon T. & R. com	2¾	3
Miller Rubber com	50	58
do 8 pct pfd.	70	73
Mohawk Rubber	70	80
Portage Rubber com	..	1
do 7 pct pfd.	..	1½
Republic Rubber com	17c	25c
do 7 pct pfd.	9	10
do 8 pct pfd.	..	2½
Rubber Products	40	60
Star Rubber com	..	100
do 8 pct pfd.	..	100
Swinehart T. & R. com	..	40
do 7 pct pfd.	..	70
Phoenix Rubber com	..	15
do pfd.	..	90
Standard Tire com	..	100
do pfd.	..	90

American Rubber Patents

ISSUED AUGUST 16, 1921

1,387,525—To Bruce M. Warner, Jackson, Mich. Tire holder.

1,387,616—To Fred Thomas Roberts, Cleveland, Ohio, assignor to Paramount Rubber Consolidated, Inc., Philadelphia, Pa. Apparatus for making pneumatic inner tubes.

1,387,805—To Fred Thomas Roberts, Cleveland, Ohio, assignor to Paramount Rubber Consolidated, Inc., Philadelphia, Pa. Process of making rubber articles having cores and apparatus therefor.

1,387,976—To Clarence C. Goodman, Elyria, Ohio. Rubber heel.

1,387,988—To Louis Kaplan, New York, N. Y. Rubber heel.

1,388,087—To William Anthony Stephens, Oakland, Cal. Automatic tire-signal.

1,388,000—To Ray W. Pritchard, Baltimore, Md. Rim-guard for tires.

1,388,032—To William Frost, London, England, assignor to Harvey Frost & Co., Ltd., London England. Burner for vulcanizers.

1,388,123—To Fred Thomas Roberts, Cleveland, Ohio, assignor to Paramount Rubber Consolidated, Inc., Philadelphia, Pa. Method of making hollow rubber articles.

1,388,124—To Fred Thomas Roberts, Cleveland, Ohio, assignor to Paramount Rubber Consolidated, Inc., Philadelphia, Pa. Process of and apparatus for making hollow rubber articles.

1,388,125—To Fred Thomas Roberts, Cleveland, Ohio, assignor to Paramount Rubber Consolidated, Inc., Philadelphia,, Pa. Apparatus for making hollow rubber articles.

1,388,138—To Robert H. Atcheson, Providence, R. I., assignor to Ibex Rubber Corporation, Jersey City, N. J. Method of and apparatus for vulcanizing.

ISSUED AUGUST 30, 1921

1,388,840—To Edward H. Angier, Framingham, Mass. Preparing tires for shipment or storage.

1,388,843—To Lorenz F. Biesmeyer and Otto Stocksick, Chamois, Mo. Resilient-tire-casing filler.

1,389,005—To William M. McEwen, Chicago, Ill. Tire-casing filler.

1,389,024—To Nathaniel Baldwin, East Mill Creek, Utah. Pneumatic tire.

1,389,025—To William Bernstein, Jamaica, Plain, Mass., assignor to Panther Rubber Mfg. Co., Stoughton, Mass. Tread.

1,389,093—To Edward F. Branen, Sr., Elgin, Ill. Method of making tire-fillers.

1,389,362—To Reece Jones, Tulsa, Okla. Inner tube for tires.

New Incorporations

NEW YORK

R. and G. Rubber Co., Manhattan, $5,000; S. Klein, S. Zimmerman, H. Booke; attorney, J. M. Wolf, 2 Rector St.

Amodio Sectional Auto-Tire Co., Inc., to manufacture automobile tires. $50,000. Incorporators: G. Mingione, I. Schiano, R. Amodio—all of Rochester. Principal office, Rochester, New York.

Brennan-Busch, Inc., to deal in automobile tires.$5,000. Incorporators: J. McSweeney, 162 Union street; F. W. Busch, 462 Court street—all of Rochester, New York. Principal office, Rochester, New York.

Carew and Sheehan, Inc., to deal in crude rubber, etc. $1000. A. E. Sheehan, president; M. M. Carew, vice president and treasurer; W. K. Duprez, secretary. Principal office, 61 Whitehall street, New York City.

Caughlin Manufacturing Co., to manufacture leather, rubber and cloth fabrics. $5000. Incorporators; F. D. Zahn, E. Herrman, R Lader—all of 522 Fifth avenue, New York City.

Durlastic Manufacturing Co., Inc., to sell rubber garters, belts etc. $15,000. Incorporators: D. Alperin, 99 Avenue C, A. Draisin, 50 East 108 street, C. Baron, 500 West 177th street—all in New York City.

Factory Tire Outlet Corporation, to manufacture rubber and gutta percha goods. $250,000. H. Pivnick, 729 Saratoga avenue, Brooklyn; F. C. Corson, 664 117th street, Richmond Hill, Long Island; J. Brenner, 41 Park Row, New York—all in New York City.

J. & J. Battery Auto Supply service, to deal in automobile accessories. $50,000. Jack Heimbinder, president; Jeanne Gold, vice president; Joseph Gold, treasurer; Jeanette Heimbinder, secretary. Principal office, 3025 Hamilton Parkway, Brooklyn, New York

Porteous Products Co., Inc., to manufacture rubber goods, $25,000. A. G. Porteous, 68 West 128 street, New York; F. L. Woodward, 358 73rd street, Brooklyn; W. R. Chamberlain, 247 Bedford avenue, Brooklyn—all in New York.

DELAWARE

Waterproofing Textiles Corp., Georgetown. $250,000. Clarence Salzornan, Werner Howard, Chester T. Clark, New York. Attorney, Woodburn Martin, Georgetown, Del.

Hayward Rubber Co., to manufacture tires. $200,000. Incorporators: Wm. C. Zimmerman, L. T. Zimmerman, Phila.; E. C. Boyd, Wilmington. Attoreny, Harry P. Joslyn, Wilmington.

Armour Tire Corporation, to manufacture and deal in tires. $1,000,000. Incorporators: H. L. Ellis, Jr., J. L. Cunningham, F. Fallon—all of 149 Broadway,, New York City. Delaware agent, Charter Service Corporation, 206 W. 9th street, Wilmington, Delaware.

Benjamin Products Corporation, to deal in rubber and gutta percha and manufacture from same. $1,000,000. Incorporators: A. R. Oakley, Pearl River; W. E. Schiels, Jr., 153 Division avenue, Brooklyn—both in New York; R. A. Van Hooris, 77 Oak street, Jersey City, New Jersey. Delaware agent, Registrar and Transfer Company, 100 West 10th street, Wilmington, Delaware,

East End Tire Company of Erie, Inc., to sell Kenyon cord tires and tubes. $25,000. W. R. Hull, president, 119 W. 18th St.; W. H. Swarthout, secretary and treasurer, 2918 Plum street—both of Erie. H. G. Pagani, director, F. W. Fischlein, director—both of 5901 Penn street, Pittsburgh—both in Pennsylvania. Principal office, 1619 State street, Erie, Pennsylvania.

Schrader's Sons, Inc. of Ohio, to manufacture and deal in tires, etc. $100,000. Incorporators: W. T. Hunter, Jr., 43 Linden avenue; E. J. Phillips, 1177 Dean street—both of Brooklyn. M. C. Schweinert, 42 Riverside Drive, New York; P. G. Cole, 63 Greenway North, Forest Hills—all in New York. J. Volckhausen, 54 Fulton street, Weehawken, New Jersey. Delaware agent, Corporation Trust Company of America, Wilmington, Delaware.

NEW JERSEY

Chicago Rubber Clothing Co., to manufacture rubber clothing, etc. $125,000. Incorporators: W. F. Brower, A. S. Behrend, E. L. Crane—all in Newark, New Jersey. Principal office, 44 Clinton street, Newark, New Jersey. Agent in charge, W. F. Brower.

Excel All Puncture Proof Inner Tube Co., to manufacture and sell automobile tubes, tires, etc. $125,000. Incorporators: F. G. Schaefer, D. A. Farrington both of 673 Summit avenue, Jersey City; E. I. Williams, River Edge—both in New Jersey. Principal office, 673 Summit avenue, Jersey City, New Jersey. Agent in charge, F. G. Schaefer.

New Jersey Chemical & Rubber Works, Inc. $100,000. M. Gunsman, president; N. Ginsburg, vice president and secretary; J. Janoff, treasurer. Principal office, Broadway, Hillside, New Jersey.

Rubber Service Company, to manufacture and sell dipped rubber goods. $50,000. Incorporators: A. K. White, 149 Livingston avenue; C. R. Holman, 51 Remsen street—both of New Bruswick; H. W. Ritter, Main street-both in New Jersey. Principal office, Causeway and Water streets, South River, New Jersey.

MASSACHUSETTS

A. M. K. Tire Fluid Company, to manufacture and deal in automobile tires. $100,000. Incorporators: J. E. Salmon, 3 Harts' avenue; A. J. McKenzie, 140 Mathnen street; F. J. Hubin, 135 Third street—all of Lowell. Principal office, Lowell, Massachusetts.

Adirondack Tire Tube Company, to manufacture an automobile tire tube called "Adirondack". $200,000. W. H. Barse, president; A. C. Kelley, vice president; C. N. Burnell, treasurer and manager; F. P. Fleming, secretary—all of Springfield, Massachusetts. Principal office, 780 Worthington street, Springfield.

Royal Tire Fabric Co., Inc., to manufacture tire fabrics. $50,000. Incorporators: D. Miller, 49 Aetna street, S. Miller, 102 Providence street, H. Taber, 35 Catherine street—all of Worcester, Massachusetts. Principal office, Worcester, Massachusetts.

OHIO

The City Tire and Repair Company, Canton. $25,000. Incorporators: Walter R. Hanner, Fred C. Swanger, Karl G. Sisterhen, Wm. I. Zinn and Francis J. Conley.

The Talbott Rubber Company, Cleveland. $500. Incorporators: Frank R. Talbott, J. W. Culley, R. Stanley Lucas, C. A. Crummel and Dr. C. C. Craig.

The Springfield Rubber Company, Springfield. $10,000. Incorporators: W. F. Nutt, J. J. Anzalone, J. B. Austin, P. C. Leffel, R. F. White.

The Roslee Rubber Company, Akron. $25,000. Incorporators: L. Schartenberg, I. Brown, F. E. McKee, N. W. Abel, Stephen Sauer.

Mercury Rubber Co., Akron. $10,000. Alden C. Fisher, R. S. Worthington.

RHODE ISLAND

Apex Tire & Rubber Co., to manufacture tires etc. 250 shares of common stock without par value. Incorporators: D. V. Smith, J. M. Franklin—of Providence, C. H. Sprague—of Arctic; both in Rhode Island. Principal office, Providence, Rhode Island.

TEXAS

Bear Rubber Mills Corporation, to manufacture tubes, tires, etc. $1,000,000. Don E. Cameron, Charles Massey, Claude J. Kelly, San Antonio, Texas. Attorney, United States Corporation Co. of Wilmington, Del.

INDIANA

Indianapolis Molded Rubber Products Company, Indianapolis, to sell molded rubber products. $100,000.

MICHIGAN

Wolverine Rubber Co., Detroit. $1,000,000. Empire Rubber Goods, Detroit, to manufacture rubber goods. Principal office, 4462 Third avenue, Detroit.

WASHINGTON

Jack Tire & Rubber Co., Spokane. $1,000,000. Incorporators: Claude D. Randall, Floyd B. Danskin and John B. White.

Dissolution

Paramount Rubber Production Co., Waterloo, New York.

THE RUBBER AGE BUYERS GUIDE

ACCUMULATORS
Adamson Machine Co., Akron, O.
Akron Rubber Mold & Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Wellman-Seaver-Morgan Co., Cleveland, Ohio.

ACIDS
Harshaw, Fuller & Goodwin Co., Cleveland, O.
National Aniline & Chemical Co., Inc. New York.

ACID TANKS
Birmingham Iron Foundry, Derby, Conn.
Devine, J. P., Co., Buffalo, N. Y.
Farrel Foundry & Machine Co., Ansonia, Conn.

AIR & STEAM METAL BAGS
Allsteel Ridewell Tire and Rubber Co., Dayton, Ohio.

AIR BRAKE HOSE
United States Rubber Co., New York.

AIR GOODS
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AIR MATTRESSES
Davol Rubber Co., Providence, R. I.
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AIRPLANE AND BALLOON CLOTHS
United States Rubber Co., New York.
Hodgman Rubber Co., Tuckahoe, N. Y.

ALBA WHITING
Daigger, A., & Co., Chicago, Ill.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Industrial Chemical Co., New York.

ALCOHOL
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Tyler Patterson Co., Clev'd, O.

ALUMINUM FLAKE
Aluminum Flake Co., Akron, Ohio.
Butcher, L. H., Co., New York, San Francisco.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.

AMMONIA AQUA
Laidlaw, Kelly & Co., New York.
Tyler Patterson Co., Clev'd, O.

ANGLE THERMOMETERS
Taylor Instrument Companies, Rochester, N. Y.

ANILINE OIL
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Klipstein, A., & Co., New York
National Aniline & Chemical Co., Inc. New York.
Tyler Patterson Co., Clev'd, O.

ANILINE OIL PLANTS
Devine, J. P., Co., Buffalo, N. Y.

ANTIMONY, SULPHURETS
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Klipstein, A., & Co., New York.
Rare Metal Products Co., Belleville, N. J.
Tyler Patterson Co., Clev'd, O.
Typke & King, Ltd., Mitcham, England.

APRONS—RUBBER
Hodgman Rubber Co., Tuckahoe, N. Y.
Miller Rubber Co., Akron, Ohio.

ARTIFICIAL RUBBER
Carter Bell Mfg. Co., New York.
Stamford Rubber Supply Co., Stamford, Conn.

ASBESTINE
Butcher, L. H., Co., New York.
Daigger, A., & Co., Chicago, Ill.
Fulper, Edward B., Trenton, N. J.
Harshaw, Fuller & Goodwin Co., Cleveland, O.
Tyler Patterson Co., Clev'd, O.

ATOMIZERS
The Rubber Products Co., Barberton, Ohio.

AUTOCLAVES
Devine, J. P., Co., Buffalo, N. Y.

AUTOMOBILE COATS
Hodgman Rubber Co., Tuckahoe, N. Y.
United States Rubber Co., New York.

AUTO TOP FABRICS
Hodgman Rubber Co., Tuckahoe, N. Y.
Taylor, Armitage & Eagles, Inc.,
Turner Co., J. Spencer, New York.
United States Rubber Co., New York.

BALATA
Wood, Charles E., New York.

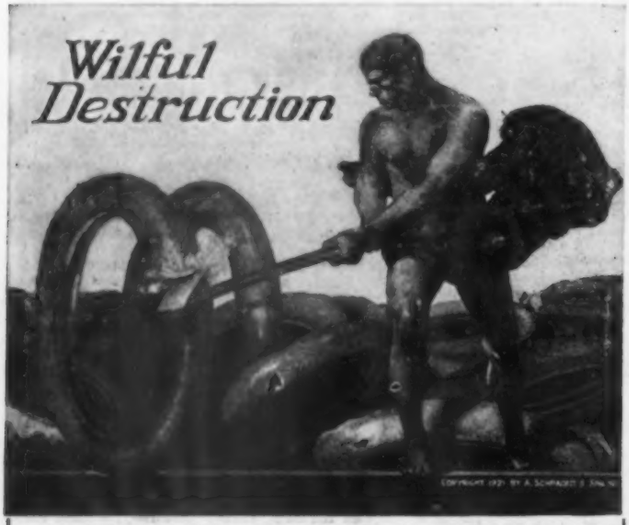
BALATA FILM (Colorless)
Peters Bros. Rubber Co., N. Y.

BALLOON FABRICS
United States Rubber Co., New York.

BALLOONS, TOY
Miller Rubber Co., Akron, Ohio.

BALLOONS, TOY, DYES FOR
National Aniline & Chemical Co., Inc. New York.

BALLS, DOLLS AND TOYS
Davol Rubber Co., Providence, R. I.
Essex Rubber Co., Trenton, N. J.
Miller Rubber Co., Akron, Ohio.
New York Rubber Co., New York.
United States Rubber Co., New York.



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